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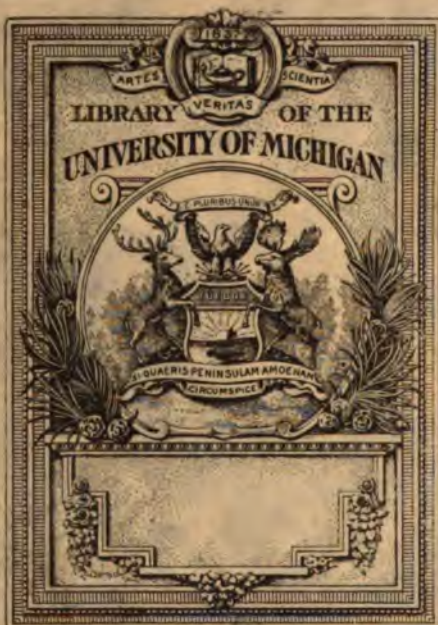
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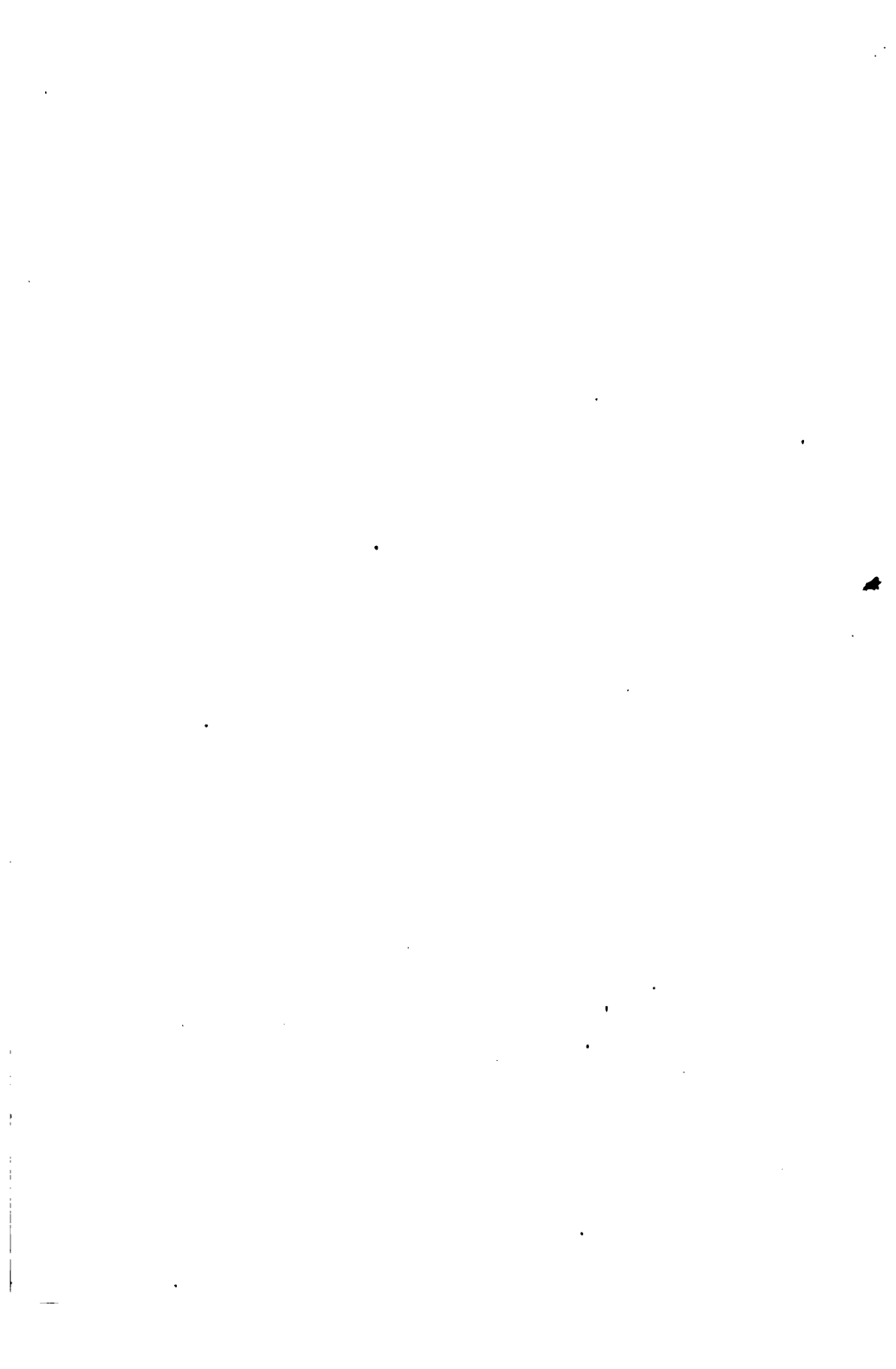
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JOURNAL
OF THE
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OF
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OF
GREAT BRITAIN AND IRELAND.





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THE FEDERATION OF INSURANCE INSTITUTES
OF GREAT BRITAIN AND IRELAND.

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CONTENTS.

	PAGE
Officers of the Federation,	v
Examiners, 1907-1908,	vi
List of Subscribing Offices and Honorary Members,	vii
Treasurer's Statement, 1906,	viii
The Federation of Insurance Institutes of Great Britain and Ireland,	ix
Institutes affiliated with the Federation,	xv
Conference, Birmingham, 1907, and Report of Executive, 1907, ...	xix
Address by the President (Mr. E. Roger Owen, London),	xxiii
Report of the General Committee of the Insurance Clerks' Orphanage,	xxxi
Accounts and Balance Sheet Insurance Clerks' Orphanage, ...	xxxvi
Constitution of the Federation,	xxxix
Bye-laws,	xlv
"Assignations of Life Policies and Legal Decisions thereon." By A. H. B. Constable, <i>Insurance Society of Edinburgh</i> , 22nd January, 1907,	1
"Brass Founders." By W. J. Mumford, <i>Insurance Institute of Birmingham</i> , 26th April, 1907,	185
"Clothing Factories." By Robert A. Dixon, <i>Insurance Institute of Yorkshire</i> , 19th February, 1906,	127
"Comparison of British and Foreign Fire Insurance Methods." By Mr. E. B. Hiles, <i>Insurance Institute of Manchester</i> , 15th March, 1907,	143
"Fish Hook and Fishing-Tackle Works and Needle Works." By David Kyd, <i>Insurance Institute of Birmingham</i> , 8th March, 1907,	199
"Industrial Assurance." By Joseph Burn, F.I.A., <i>Insurance Institute of Bristol</i> , 25th January, 1907,	47
"Inspection of Automatic Sprinkler Installations." By H. S. Radcliffe, <i>Insurance Institute of Bristol</i> , 30th November, 1906,	213

"On the Significance of Urinary Abnormalities, and Particularly the Presence of Albumin and Sugar; otherwise Albuminuria and Glycosuria, in Persons Applying for Life Assurance Policies." By A. Rabagliati, M.A., M.D., <i>Insurance Institute of Yorkshire</i> , 5th March, 1906,	25
"Paper Mills." By J. H. Chapman, <i>Insurance Institute of Newcastle-upon-Tyne</i> , 25th January, 1907,	257
"Public Fire Extinguishing Equipment in Scotland." By James Laird, <i>Insurance Institute of Edinburgh</i> , 5th March, 1907,	165
"San Francisco: The Earthquake and Conflagration of the 18th April, 1906." By Robert Kirkwood M'Kenzie, <i>Insurance and Actuarial Society of Glasgow</i> , 4th February, 1907,	251
"The Agency System of Insurance Companies." By Robert Chapman, <i>Insurance and Actuarial Society of Glasgow</i> , 3rd December, 1906,	73
"The History and Development of Marine Insurance." By G. E. Martindale, <i>Insurance Association of Manchester</i> , 21st November, 1906,	335
"The Moral Hazard in Fire Insurance." By H. P. Blunt, <i>Insurance Institute of Newcastle-on-Tyne</i> , 9th December, 1904,	97
"The Utilisation of Peat." By H. S. Gibson, <i>Insurance Institute of Ireland</i> , 19th February, 1907,	229
Examination Papers, 1907,	361
Names of Successful Candidates,	399
The Insurance Institute of Toronto—Results of 1907 Examinations,	420
Index to Volumes I. to IX. inclusive,	423

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T. A. Bentley, . . .	Manchester, . . .	1907.	Fire.
J. A. Bewley, . . .	Liverpool, . . .	1907.	Fire.
H. Bingham, . . .	Liverpool, . . .	1907.	Fire.
A. Blair, . . .	Glasgow, . . .	1898.	Fire.
W. Blair, . . .	Bristol, . . .	1905.	Fire.
J. H. Boocock, . . .	Birmingham, . . .	1898.	Fire.
J. G. Boss, . . .	Newcastle-on-Tyne, . . .	1899.	Fire.
J. H. Chapman, . . .	Newcastle-on-Tyne, . . .	1904.	Fire.
J. N. Clymer, . . .	Manchester, . . .	1907.	Fire.
A. H. Cowpe, . . .	Leeds, . . .	1905.	Fire.
H. D. Curnick, . . .	Manchester, . . .	1903.	Fire.
J. P. Eddison, . . .	Leeds, . . .	1899.	Fire.
W. R. Evison, . . .	London, . . .	1906.	Fire.
A. S. Fraser, . . .	Belfast, . . .	1903.	Fire.
H. Gayford, . . .	London, . . .	1907.	Fire.
J. Gemmill, . . .	Glasgow, . . .	1902.	Fire.
F. S. Goggs, . . .	Edinburgh, . . .	1904.	Accident.
N. B. Gunn, . . .	Edinburgh, . . .	1899.	Life.
A. Guthrie, . . .	Glasgow, . . .	1905.	Fire.
J. M. Guttridge, . . .	Manchester, . . .	1901.	Fire.
W. Hartley, . . .	Manchester, . . .	1904.	Fire.
J. Haslam, . . .	Nottingham, . . .	1899.	Accident.
H. M. Healy, . . .	London, . . .	1906.	Fire.
F. P. Hearn, . . .	London, . . .	1907.	Fire.
W. Holbrook, . . .	Leeds, . . .	1903.	Fire.
C. E. Howell, . . .	Dublin, . . .	1898.	Life.
M. P. Jones, . . .	London, . . .	1906.	Fire.
O. D. Jones, . . .	Leeds, . . .	1901.	Fire.
W. S. Kinnear, . . .	Dublin, . . .	1902.	Fire.
D. L. Laidlaw, . . .	Glasgow, . . .	1901.	Fire.
G. L. Lambert, . . .	Manchester, . . .	1903.	Fire.
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R. McConnell, . . .	London, . . .	1901.	Fire.
J. Corbet M'Bride, . . .	London, . . .	1907.	Fire.
J. M'Kinnon, . . .	Liverpool, . . .	1907.	Fire.
W. G. Neish, . . .	Newcastle-on-Tyne, . . .	1904.	Fire.
P. L. Newman, . . .	York, . . .	1899.	Life.
C. E. Noverre, . . .	London, . . .	1905.	Fire.
J. Ostler, . . .	Manchester, . . .	1898.	Fire.
E. Roger Owen, . . .	London, . . .	1907.	Fire.
H. J. Pearce, . . .	Glasgow, . . .	1904.	Life.
S. J. Pipkin, . . .	London, . . .	1907.	Fire.
H. Pocklington, . . .	Leeds, . . .	1902.	Fire.
W. Richardson, . . .	Edinburgh, . . .	1903.	Fire.
J. B. Roberts, . . .	Leeds, . . .	1898.	Fire.
J. Robertson, . . .	London, . . .	1904.	Fire.
R. H. Russel, . . .	Northampton, . . .	1903.	Fire.
A. W. Sneath, . . .	Leeds, . . .	1903.	Fire.
H. T. Sneezum, . . .	London, . . .	1907.	Fire.
H. E. Southam, . . .	London, . . .	1902.	Accident.
K. J. Tarrant, . . .	London, . . .	1906.	Fire.
R. Taylor, . . .	Leeds, . . .	1906.	Fire.
A. G. Thomson, . . .	Edinburgh, . . .	1904.	Accident.
A. D. L. Turnbull, . . .	Edinburgh, . . .	1905.	Life.
R. Walton, . . .	Liverpool, . . .	1907.	Fire.

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Dr.										FOR TWELVE MONTHS ENDING DECEMBER 31st, 1906.										Cr.													
To Balance from last Account										£268	16	8	By Journals—										£179	10	3
" Journal Sales—										£159	10	3	Printing Volume VIII.										...	...	...	...	10	1	6
Institutes										23	10	2	Publication Committee's Expenses										...	...	...	...	10	1	6
C. & E. Layton										18	1	6											...	...	...	...
Sundry Sales												
Examinations—										201	1	11	Examinations—										...	...	...	...
Entrance Fees, &c.,										69	13	9	Printing and Stationery										...	...	...	...	£46	19	6
Contributions—													Postages										...	...	...	...	3	17	8
Insurance Companies										£84	12	0	Clerical Assistance										...	...	...	...	15	0	0
Institute Levies										55	4	0											...	...	...	...
Bank Interest										139	16	0	General Expenses—										...	...	...	...	50	0	0
										6	1	0	Secretary's Salary										...	...	...	...	15	0	0
													Allowance for Office Expenses										...	...	...	...	24	0	9
													Postages and Petty Cash										...	...	...	...	14	16	6
													Printing Expenses										...	...	...	...	11	1	11
													Expenses in connection with London										...	...	...	...
													Meetings re New Constitution										...	...	...	...
													Balance—										...	...	...	...	303	10	10
													Cash in Bank										...	...	...	...	1	10	5
													Cash in Hand												
												
												
												
												
												
												
												
												
												
												
												
												
												
												
												
												
												
												
												
												
												
												
												
												
												
												
												
												
												
												
												
												
												
												
												
												
												
												

THE FEDERATION OF INSURANCE INSTITUTES OF GREAT BRITAIN AND IRELAND.

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Founded 1907.

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Objects: The cultivation of knowledge and information in all matters relating to the various branches of Insurance by means of—(a) The reading of papers or delivery of lectures upon technical or other subjects. (b) The awarding of prizes for papers of merit written by members. (c) The circulation of a Journal containing articles of technical and general interest contributed by members. (d) A Reference Library and Reading Room and (if possible) a Lending Library. (e) A Museum containing specimens of Home, Foreign, and Colonial Products, Models, Parts, Drawings and Photographs of Machinery, Appliances, and other objects of interest.

PRESIDENT—Geo. C. Morant, *Commercial Union*.

VICE-PRESIDENTS—S. L. Anderson, *London Guarantee and Accident*; E. Baumer, *Sun*; S. Stanley Brown, *Employers' Liability*; H. B. Guernsey, *Phoenix*; C. E. Noverre, *Norwich Union*; O. Morgan Owen, *Alliance*;

E. Roger Owen, *Commercial Union*; S. J. Pipkin, *Atlas*; J. Powell, *Union*; A. J. Relton, *Guardian*; G. H. Ryan, *Pelican and British Empire*; A. Vian, *Railway Passengers*.

COUNCIL—H. W. Andras, *Provident Life Fund*; W. E. Blake, *London and Lancashire Fire*; J. C. Carstairs, *Law Union and Crown*; M. H. P. Coulson, *Atlas*; W. R. Evison, *Alliance*; H. Gayford, *Northern*; A. W. Hardy, *Phoenix*; E. H. Holt, *Law Life*; H. Human, *Guardian*; A. Levine, *Alliance*; G. E. Mead, *Sun Fire Office*; R. M'Connell, *Royal*; G. H. M'Causland, *Commercial Union*; G. Sheppard, *North British and Mercantile*; E. E. Westmacott, *Liverpool and London and Globe*.

HON. TREASURER—Henry Mann, *Commercial Union*.

HON. SECRETARY—G. M'Kay Morant, *King*, 8 Bucklersbury, London, E.C.

THE INSURANCE INSTITUTE, MANCHESTER.

Founded 1873.

PRESIDENT—J. Loudon, *Royal Exchange*.

VICE-PRESIDENTS—G. L. Lambert, *North British and Mercantile*; J. N. Clymer, *Atlas*; J. Mason Guttridge, *Alliance*.

COUNCIL—James Ostler, *Northern*; T. A. Beutley, *London and Lancashire Fire*; Frank Paulden, *London*; A. E. Evans, *Scottish Union and National*; W. Hartley, *London and Lancashire Fire*; J. Morrison, *Hand-in-Hand*.

HON. TREASURER—G. H. Nicholls, *Ocean*.

HON. LIBRARIAN—W. W. Blackstock.

HON. SECRETARY—J. Mason Guttridge, *Alliance*, 74 King Street.

THE INSURANCE ASSOCIATION OF MANCHESTER.

Founded 1883.

Objects: To encourage the delivery of essays and lectures upon subjects connected with Insurance, and discussion thereon; to organise visits of inspection to such risks as the Committee of Management may decide upon; and to promote social intercourse amongst those connected with Insurance Companies.

PRESIDENT—W. H. Williams, *North British and Mercantile*.

VICE-PRESIDENTS—W. O. Coates, *Liverpool and London and Globe*; J. M. Guttridge, *Alliance*; Chas. Lambert, *Legal and General*.

COMMITTEE—W. W. Blackstock, Broker; H. A. Wilcock, *Vulcan*; F. W. E. Barker, *Alliance*; W. Collinge, *Sun*; H. P. Jackson, *Liverpool and London and Globe*; H. Ray, *Westminster*; A. E. Hartley, *Guardian*; W. E. E. Hamble, *Ocean*; F. O. Lomas, *Law Guarantee*; S. B. Wood, *Western*; L. K. Mallinson, *State*; F. Smith, *Scottish Union and National*.

HON. TREASURER—S. Barker, *State Fire*.

HON. SECRETARY—E. A. Chambers, Broker, 16 John Dalton Street, Manchester.

THE INSURANCE INSTITUTE OF NEWCASTLE-ON-TYNE.

Founded 1896.

The objects of the Institute shall be the promotion and cultivation of a thorough knowledge of Insurance business by means of the reading of papers, the delivery of lectures upon subjects connected therewith, the discussion of questions relating thereto, the formation of a Library, the inspection of risks and in any other way which may be deemed desirable, and, generally, the promotion of social intercourse amongst the members.

PRESIDENT—J. H. Chapman, *Norwich Union Fire.*

VICE-PRESIDENTS—W. G. Neish, *Northern*; J. Pringle, *Royal*; T. H. Watson, *Law Accident.*

COMMITTEE—A. Woodburn, *Alliance*; H. P. Blunt, *Royal*; F. W. Panton, *Norwich Union Fire*; G. R. Hansen, *Norwich Union Fire*; T. C. Metcalf, *Atlas*; J. G. Ogilvie, *Caledonian*; P. G. Stafford, *Ocean.*

HON. LIBRARIAN—G. E. Henderson, *Royal.*

HON. SECRETARY AND TREASURER—F. F. Worthington, *Union*, 38 Westgate Road.

THE NORWICH INSURANCE INSTITUTE.

Founded 1886.

PATRONS—Major F. Astley Cubitt, J.P.; S. Gurney Buxton, D.L., J.P.

PRESIDENT—C. A. Bathurst Bignold, D.L., J.P.

VICE-PRESIDENTS—W. P. Abel, *Norwich*; W. H. Andersson, *Liverpool*; J. H. Chapman, *Newcastle*; G. O. Clark, *Norwich*; A. M. Clydesdale, *Glasgow*; J. F. Cubitt, *Bristol*; H. D. Curnick, *Manchester*; F. Dalton, *Birmingham*; J. J. W. Deuchar, *Norwich*; A. Dixon, *Toronto*; Caryl Fiennes, *Dublin*; Geo. Gibb, *Melbourne*; J. Montgomery Hare, *New York*; J. B. Laidlaw, *Toronto*; John Large, *Norwich*; W. H. Lowden, *San Francisco*; Bruce Morison, *F.R.G.S., London*; C. E. Noverre, *F.R. Hist. S., London*; H. Panton, *Sunderland*; F. Oddin Taylor, *D.L., J.P., Norwich*; J. T. Ward, *Belfast*; Joseph Watson, *Leeds*; Leslie Watson, *Leeds.*

TRUSTEES—W. P. Abel, J. de Caux, L. B. Fögl, F. O. Taylor.

COUNCILLORS—J. de Caux, W. Blazeby, E. B. Corshie, E. Felce, L. B. Fögl.

TREASURER—C. R. Quinton. **AUDITOR**—H. G. Booty.

LIBRARIAN—C. B. Pigot.

MICROSCOPIST AND PHOTOGRAPHER—J. R. Delf.

CURATOR—F. J. Hall. **ASSISTANT CURATOR**—E. Felce.

HON. SECRETARY—W. Thouless, 9 Surrey Street.

HON. ASSISTANT SECRETARY—J. Grinling.

THE NOTTINGHAM INSURANCE INSTITUTE.

Established 1898.

Objects: The reading of papers and the delivery of lectures upon subjects connected with Insurance business generally, the discussion of all questions relating thereto, and the promotion of social intercourse amongst the members of the profession in Nottingham and district.

PRESIDENT—H. W. Saunderson, *Northern*.
VICE-PRESIDENTS—T. J. Plant, *Royal Exchange*; T. V. Dean, *Century*.
COUNCIL—J. W. Foster, *Scottish Accident*; E. Neave, *Guardian*; W. H. M'Dermott, *Alliance*; W. H. Warsop, *Scottish Provident*; L. J. Towle, *Atlas*; T. B. Redgate, *North British and Mercantile*.
HON. TREASURER—F. Hill, *Norwich and London*.
HON. SECRETARY—T. Henshall, *London*, 25 Victoria Street.

THE INSURANCE INSTITUTE OF YORKSHIRE, LEEDS.

Founded 1888.

Objects: The delivery of lectures on subjects connected with Insurance business, the discussion of questions relating thereto, and, generally, the promotion of social intercourse amongst the members of the Insurance profession in Yorkshire.

PRESIDENT—H. Pocklington, *Commercial Union*.
VICE-PRESIDENTS—W. Holbrook, *Royal*; W. Riley, *Westminster*; A. Moorhouse, *Friends' Provident*; E. A. Birks, *Yorkshire*; W. A. Holroyd, *Sun Fire*; R. Taylor, *Liverpool and London and Globe*.
COUNCIL—T. G. Brunskill, *Royal*; H. Cooke, *Liverpool and London and Globe*; C. E. Fox, *London and Lancashire Fire*; W. Thorp, *Assessor*; R. A. Dixon, *Liverpool and London and Globe*; W. E. Metcalf, *North British and Mercantile*; F. E. Oates, *Westminster*; G. Potter, *Sun Fire*; F. B. Teale, *Commercial Union*; F. Bingham, *British Law*; A. W. Sneath, *Commercial Union*; E. S. Wood, *Atlas*.
HON. TREASURER—F. Denton, *Sun Fire*.
HON. AUDITORS—F. C. Mallett, *Atlas*; F. A. Wood, *Commercial Union*.
HON. LIBRARIAN—T. S. Parker, *Sun Fire*.
HON. SECRETARY—E. Bagshaw, *Phœnix*, 13 South Parade, Leeds.

INSTITUTES AFFILIATED WITH THE FEDERATION.

THE INSURANCE INSTITUTE OF MONTREAL.

Founded May 1900.

HONORARY PRESIDENT—The Right Honourable Lord Strathcona and Mount Royal, G.C.M.G.
PRESIDENT—Sergeant P. Stearns.
VICE-PRESIDENTS—C. C. Hole, *Royal Victoria Life*; Lansing Lewis.
PAST PRESIDENTS—W. M. Ramsay, *Standard Life*; G. F. C. Smith, *Liverpool and London and Globe*; B. Hal Brown, F.S.S., *London and Lancashire Fire*; E. P. Heaton, *Guardian*; T. L. Morrissey, *Union*.
MEMBERS OF COUNCIL—P. R. Gault, H. R. Holland, G. Lyman, *Norwich Union*; J. Rowat, W. A. Wilson.
HON. TREASURER—T. F. Dobbin, *London and Lancashire Fire*.
HON. SECRETARY—A. R. Howell, *Royal Life*.
INSTITUTE ROOMS—Inglis Building, 2381 St. Catherine Street.

THE INSURANCE INSTITUTE OF NEW ZEALAND, WELLINGTON.

Established 1899.

PRESIDENT—Morris Fox, *Government Life*.

VICE-PRESIDENT—A. E. Kernot, *Australian Alliance*.

COMMITTEE—A. E. Gibbs, *Colonial Mutual Life*; H. L. Levestam, *Government Life*; C. M. Montefioul, *Ocean Accident*; C. D. Morpeth; G. T. Mason, *London and Lancashire*; T. W. Pilcher, *Manchester Fire*; Sortain Smith, *Government Life*; J. Wishart, *Australian Mutual Provident*.

HON. AUDITOR—C. Brooke-Taylor, *South British*.

HON. SECRETARY AND TREASURER—A. E. Waterson, *Ocean Accident*, 4 Custom House Quay.

THE INSURANCE INSTITUTE OF SOUTH AFRICA, CAPE TOWN.

PRESIDENT—John Robb, *South Africa Mutual*.

VICE-PRESIDENT—T. A. Cox, *Commercial Union*.

MEMBERS OF COUNCIL—F. W. Wilson, *New Zealand*; R. H. Mitchell, *Southern Life*; A. H. Bullen, *Star*; Wm. Hay; F. E. Stevens, *New York Life*; T. A. Cox, *Commercial Union*; T. C. Shaw, *Union*; W. Elliott, *Southern*; R. S. Price, *Economic*; R. R. Brydone, *Federal*; G. S. M'Laren, *South African Mutual*; H. M. Boddy, *Manufacturers*; A. M'Guffie, *Royal Exchange*; A. G. M'Leod, *Central*; A. C. F. Gore, *Guardian*.

HON. SECRETARY AND TREASURER—William Mathieson, 106 Adderley Street.

THE INSURANCE INSTITUTE OF TORONTO.

Founded 1899.

HON. PRESIDENT—Hon. Geo. A. Cox, President, *Canada Life*.

PRESIDENT—E. Willans, *Imperial Guarantee*.

VICE-PRESIDENT—L. Goldman, A.I.A., *North America Life*.

CURATOR—H. W. Crossin, *Canadian Fire Underwriters*.

TREASURER—C. Elvins, *Imperial Life*.

SECRETARY—A. G. Portch, A.I.A., *Canada Life*, 27 and 29 Wellington Street, East.

COUNCIL—C. H. Fuller, *Continental Life*; F. J. Lightbourn, *Ontario Accident*; W. C. Macdonald, *Confederation Life*; A. Wright, *London and Lancashire Fire*; G. P. Payne, C.F.U.A.; A. H. Rodgers, *Norwich Union Fire*; H. A. Sherrard, *Western Fire*; C. Hughes, *Crown Life*; C. N. Neely, *Ocean Accident*; L. A. Winter, *Manufacturers' Life*; E. F. Garrow, *British America Fire*; F. J. Sparling, *National Life*; C. W. I. Woodland, *Employers' Liability*.

THE INSURANCE INSTITUTE OF VICTORIA, MELBOURNE.

Established 1884.

PRESIDENT—A. M'Laughton, F.I.A., *National Mutual Life.*

VICE-PRESIDENT—Alan H. Russell, *Union.*

COMMITTEE—Selwyn King, *Mercantile Mutual*; C. F. Howard, *London*;
A. H. Price, *New Zealand*; A. C. Trapp, *British Dominions Marine.*

HON. LIBRARIAN—Hugh McLean, *Fire Underwriters' Association.*

HON. AUDITOR—B. Goldsmith, *China Traders.*

HON. SECRETARY AND TREASURER—R. J. White, *Guardian*, 405 Collins Street.

INSURANCE CLERKS' ORPHANAGE.

Object: To maintain and educate orphan or necessitous children of Clerks and Officials of Insurance Companies who were Members of the Orphanage by placing such children at selected schools, and making money grants for their clothing, between the ages of 6 and 16.

Members and Subscribers may commence their Annual Subscriptions on any one of the following dates, viz.:—1st February, 1st May, 1st August, or 1st November, and all future Subscriptions will be due on the date so selected.

NOTE.—5s. annually qualifies for Membership. £3 3s. in one sum qualifies for a Life Membership.

PRESIDENT—The Right Honourable Lord Rothschild, G.C.V.O.

VICE-PRESIDENTS—The Right Hon. Lord Avebury, F.R.S., D.C.L., LL.D., Director, *Phoenix Fire, Pelican and British Empire Life*, and *British and Foreign Marine*; George H. Burnett, Hampstead; John Coles, Chairman, *Clerical, Medical and General Life*; Sir F. D. Dixon-Hartland, Bart., M.P., Director, *The Westminster Fire and Westminster and General Life*; C. G. Fothergill, Director, *London and Lancashire Fire*; H. Ernst Hall, Chairman, *Fire Offices' Committee*; Robert Lewis, *Alliance*; Marlborough R. Pryor, Director, *Sun Fire.*

CHAIRMAN—Saml. J. Pipkin, *Atlas.*

DEPUTY-CHAIRMAN—E. H. Holt, *Law Life.*

OFFICE—65 Watling Street, London, E.C.

SECRETARY—R. C. Cole.



THE FEDERATION OF INSURANCE INSTITUTES OF GREAT BRITAIN AND IRELAND.

THE Eleventh Annual Conference was held in the Grand Hotel, Birmingham, on Friday, 7th June, 1907, on the invitation of the Birmingham Insurance Institute. Mr. E. Roger Owen (General Manager of the Commercial Union Assurance Co. Ltd.), President of the Federation, occupied the chair, and there were present:—

Past Presidents—F. DALTON (Norwich Union), Birmingham; DAVID L. LAIDLAW (North British and Mercantile), Glasgow; JOHN G. BOSS (Royal), Newcastle-on-Tyne; THOMAS A. BENTLEY (London and Lancashire Fire), Manchester.

Hon. Secretaries to the Examiners—A. W. SNEATH (Commercial Union), Leeds; W. HOLBROOK (Royal), Leeds.

Hon. Secretary to the Publications Sub-Committee—ARCHIBALD BLAIR (late London and Lancashire Fire), Glasgow.

Founder of Insurance Clerks' Orphanage—ALBERT D. BROOKES (Alliance), Bristol.

Hon. Secretary to the Birmingham Insurance Institute—C. F. CARSON (Sun Fire), Birmingham.

Examiners—W. BLAIR (Northern), Bristol; J. H. BOOCOCK (Commercial Union), Birmingham; H. D. CURNICK (Norwich Union Fire), Manchester; W. R. EVISON (Alliance), London; N. B. GUNN (Scottish Widows), Edinburgh; A. GUTHRIE (Sun Fire), Glasgow; J. HASLAM (Ocean), Nottingham; H. M. HEALY (Hand-in-Hand), London; W. G. NEISH (Northern), Newcastle-on-Tyne; J. ROBERTSON (Northern), London; R. H. RUSSEL (Atlas), Northampton; A. D. L. TURNBULL (Scottish Widows), Edinburgh.

Secretary to the Federation—CHARLES STEVENSON, Manchester :—
and the following delegates :—

BELFAST	-	-	-	W. J. JEFFERSON, J.P. (<i>Royal</i>), President. JAMES WILLIAMSON (<i>British Law Fire and Scottish Metropolitan Life</i>), Hon. Secretary.
BIRMINGHAM	-	-	-	A. J. LEWIS (<i>Sun</i>), President. A. E. PATRICK (<i>Westminster</i>).
BRISTOL	-	-	-	W. PEARCE TAPP, JUN. (<i>Sun Fire</i>), President. GRAHAME H. WILLS. JAMES BOLTON (<i>Union</i>), Hon. Secretary.
CARDIFF	-	-	-	C. F. TAYLOR (<i>Law Union and Crown</i>), President. LLEWELLYN PUGH (<i>Yorkshire</i>). G. F. CRABBE (<i>Sun Life</i>).
EDINBURGH	-	-	-	HENRY BROWN (<i>Century</i>), President. DAVID PAULIN (<i>Scottish Life</i>). D. M. CAMERON (<i>Alliance</i>), Hon. Secretary.
GLASGOW	-	-	-	STEWART LAWRIE (<i>Alliance</i>), Hon. Secretary.
IRELAND	-	-	-	WILLIAM COOTE (<i>Sun</i>), President. W. P. SHERRIFF (<i>Northern</i>). W. A. McCONNELL (<i>Caledonian</i>), Hon. Secretary.
LIVERPOOL	-	-	-	RICHARD WALTON (<i>Northern</i>). H. WYATT (<i>London and Lancashire</i>).
MANCHESTER (INSTITUTE)	-	-	-	JOHN LOUDON (<i>Royal Exchange</i>), President. J. MASON GUTTRIDGE (<i>Alliance</i>). J. N. CLYMER (<i>Atlas</i>).
MANCHESTER (ASSOCIATION)	-	-	-	W. E. JONES (<i>Northern Accident</i>), President. W. H. WILLIAMS (<i>North British and Mercantile</i>), Vice-President. HENRY RAY (<i>Westminster Fire</i>).
NEWCASTLE-ON-TYNE	-	-	-	J. H. CHAPMAN (<i>Norwich Union</i>), President. JAMES HOPPER (<i>Sun</i>).
NORWICH	-	-	-	W. THOULESS (<i>Norwich Union</i>), Hon. Secretary.

NOTTINGHAM	-	-	S. A. BENNETT (<i>London</i>), President.
	-	-	H. W. SAUNDERSON (<i>Northern</i>), Vice-President.
	-	-	T. J. PLANT (<i>Royal Exchange</i>), Vice-President.
YORKSHIRE	-	-	F. B. TEALE (<i>Commercial Union</i>), Leeds.
	-	-	W. A. HOLROYD (<i>Sun</i>), Huddersfield.

Apologies were received from:—

Past Presidents—James Ostler (*Northern*), Manchester; B. H. O'Reilly (*Patriotic*), Dublin.

Examiners—Charles Alcock (*Royal*), Liverpool; U. A. Bathurst Bignold (*Norwich Union Fire*), Norwich; J. A. Cook (*Scottish Union and National*), Edinburgh; A. H. Cowpe (*Royal*), Leeds; J. P. Eddison (*North British and Mercantile*), Leeds; A. S. Fraser (*Commercial Union*), Belfast; J. Gemmill (*Royal Exchange*), Glasgow; F. S. Goggs (*Scottish Metropolitan*), Edinburgh; W. Hartley (*London and Lancashire Fire*), Manchester; A. Hewat (*Edinburgh Life*), Edinburgh; C. E. Howell, LL.D. (*Standard Life*), Dublin; F. Izant (*Phoenix*), London; M. Pennant Jones (*Atlas*), London; O. D. Jones (*London and Lancashire Fire*), Leeds; W. S. Kinnear (*Royal Exchange*), Dublin; R. M'Connell (*Royal*), London; S. G. Moxey (*Alliance*), Bristol; P. L. Newman (*Yorkshire*), York; C. E. Noverre (*Norwich Union*), London; H. J. Pearce (*Scottish Amicable*), Glasgow; H. Pocklington (*Commercial Union*), Leeds; W. Richardson (*Norwich Union*), Edinburgh; J. B. Roberts (*Sun Fire*), Leeds; Robert Taylor (*Liverpool and London and Globe*), Leeds; A. Gibbon Thomson (*Life and Health*), Edinburgh; F. B. Wyatt (*Clergy Mutual*), London.

After the adoption of the minutes of last Conference, the Secretary read the following

REPORT FOR THE YEAR 1907.

The meeting of the Conference in London last year marked an epoch in the history of this movement, and has given a decided impulse to the educational work which is the chief aim of the Federation. During the year under review, four new Institutes have been formed and will join the Federation at the forthcoming Conference. These are—London, Liverpool, Cardiff, and Belfast. The general work

of the Federation goes on progressively, and the reports to be submitted to the Conference give evidence of energy and progress.

The Special Committee empowered to deal with the constitution of the Federation has focussed the opinions of the various Institutes embraced. The new draft Constitution now submitted forms a nucleus which, with legal assistance, can be put into such form as may lead to the eventual grant of a charter to our body.

The report of the Executive Committee of Examiners, with the summary of results and the supplementary report on Life Examinations, go very fully into the educational scheme of the Federation, and it is not necessary in this report to do more than draw attention to certain points. The first is the increasing number of papers, which are a natural result of the scheme which has been gradually evolved. The papers themselves are well worth careful study, as illustrating especially the science of Fire Insurance. The labour incurred in preparing so many examination papers and in checking the answers of the candidates is increasing from year to year, and it may be necessary to take some steps to relieve the heavy burden on the Hon. Secretaries to the Examiners. The results of the Life Examinations are again disappointing, and the whole question may be deserving of the consideration of the Conference.

The report of the Publications Committee, which is another very important educational branch of the work of the Federation, demands careful consideration. The Journal which has recently been issued maintains its high character. The subject index, which was ordered last year, is a more elaborate undertaking than was originally anticipated; but when it is completed the compiler, Mr Archibald Blair, will be rewarded for his labours by the service he has rendered to the profession in preparing it.

The Insurance Clerks' Orphanage has more than justified its formation by the excellent work which it has done. There are already 24 children receiving benefits from the Institution, 10 having been added during the past year. The

accounts submitted to the Conference show that the total funds have been increased from £10,557 to £12,243.

The finances of the Federation call for no special remark. The credit balance of £305 1s. 3d. is satisfactory, but in view of future developments it is no more than is necessary.

The hearty thanks of the Executive are tendered to those who have, by the free expenditure of their time and energies, contributed in various ways to the advancement of the Federation. To the President for his invaluable services; to the Honorary Treasurer for his care of the financial interests of the Federation; to all the Examiners, to the members of the Examiners Committee, and especially to the Honorary Secretaries, for their respective services, increasing year by year; to Mr. Blair, Hon. Secretary of the Publications Committee, for the great labour he has bestowed in compiling the Journal; and lastly, to the Insurance press for their willing co-operation in making known from time to time the progress and work of our undertaking.

The PRESIDENT (Mr. E. Roger Owen) then addressed the Conference as follows:—Gentlemen,—In submitting for your consideration the Address which on these occasions your President is called upon to make, I desire to acknowledge and thank you for the honour you have conferred upon me by placing me in the proud position which I find myself holding this day. It is a position which, I am bound to admit, has not been earned by any special services rendered by me to the common cause in which we are interested, and consequently the compliment which you have paid to me is all the more highly appreciated.

When I accepted your invitation twelve months ago to serve as your President I fully anticipated a year of successful work on behalf of the Federation, but events over which none of us had any control, or could have possibly foreseen, have very materially modified the results which we then expected to attain. I believe, however, that at the close of this day's deliberations the aims and objects of the Federation of Insurance Institutes will have been carried forward

another step which, we trust, will lead to a more perfect organization.

Before proceeding further, I wish to acknowledge with grateful thanks the valuable assistance which I have received at the hands of my friend and immediate predecessor, Mr. Pipkin, and I am sure you will all join with me in expressing our sincere regret at his absence from our midst, whilst at the same time congratulating him most heartily on his recovery from his recent illness--an illness which I cannot help thinking was largely contributed to by the work which he so freely and generously undertook on behalf of Insurance Institutes and the Orphanage and similar objects. Mr. Pipkin's work for this Federation has been carried out with unflinching zeal and devotion, and it is to him in a very large measure that we are indebted for the interest taken in its affairs by many of the leading officials now associated with the work. We therefore extend to him our sympathy in his recent illness and our hearty congratulations on his recovery.

In offering a hearty welcome to the Delegates and Officers of the Federation, I must express my regret that I do not enjoy the same privilege as all former Presidents have enjoyed. They have been able to welcome you at home in the city of their abode, and it would have given me much pleasure to have been in the same position, but I am sure that our Birmingham friends will not object to my acting on their behalf. We all look upon Birmingham, not as a provincial and local item, but as a great manufacturing and trading centre well known in, and in active contact with, all the markets of the world, and therefore I feel that I need not claim the right of domicile in extending to you the hearty welcome of Birmingham on the present occasion. And let me remind you that this is not the first time that you have met in Birmingham. The first Conference was held in Manchester in 1897, but that, I believe, was more in the nature of a preliminary meeting, at which it was decided to establish the Conference. It was at Birmingham in 1898 that the first practical and working meeting of the Conference was held, and it would be interesting and instructive to deal

with the success which has attended the movement from that date until now, but it is not my intention to burden you with figures and statistics. Suffice it to say that the modest expectations which were then formed have been more than realised, and the prospects of the Federation at the end of its first term of ten years are brighter than the most sanguine of its promoters could have foreseen. Birmingham, as one of the most important Insurance centres, with its varied interests and its extensive experience and knowledge, has contributed in no small degree towards this result, and our thanks are due to those who have ungrudgingly and so ably assisted in the work.

From the small beginnings thus originated in Manchester, and confirmed and established in Birmingham, has gradually developed an Institution which there is every reason to hope has a brilliant future before it. In nearly all the provincial centres Institutes have already been established, those at Liverpool, Belfast, and Cardiff having, as you are aware, been completed during the year. The Provinces have led the van, and London, having at last emerged from its attitude of repose brings up the rear. Under these circumstances, and to enable us more efficiently to cope with our extended needs, it has been deemed advisable to give this Federation a new Constitution, and the report of the Special Committee entrusted with the work will be submitted to you. Whilst finality has not been reached by the Committee, it is hoped that sufficient progress has been made to justify us in believing that at an early date the whole of the Insurance Institutes in the United Kingdom will be welded into one harmonious whole, with, I trust, much benefit to our common interests.

The aims and objects of the Federation in the pursuit of those benefits are well known to you as being broadly divisible under two heads—Social and Educational.

To say that business interests can be improved by social means is to state what may not be capable of exact mathematical demonstration, but who can doubt it? Each one of us who has had any experience of the events at which social intercourse has been provided by the various Institutes knows

perfectly well that a feeling of trust and confidence and a desire for harmonious working are engendered on such occasions, and the effects of gatherings such as we are now enjoying are too obvious to require comment. My belief is that all social intercourse, affording as it does a relief from the stress and strain which necessarily attend Insurance work, is of the greatest importance, and that the effects are of no mere passing value, but tend towards lasting and permanent profit to us all.

And before leaving this question I wish to emphasize the great social value of the Insurance Orphanage. This is a separate organization, but it was launched under the auspices of the Federation, and I am glad to say it has always been fostered by Conference and received its hearty support. A report on the progress of the Orphanage will be submitted to you, and whilst I will not anticipate that report beyond congratulating the Orphanage, and those who have taken an active part in its affairs, on the ample measure of success attained, I trust it will not be considered out of place if I make a pressing appeal for further support from all quarters in aid of such a good cause and deserving object.

As to the educational objects aimed at, they were set out and embodied in formal resolutions at the Conference I have already alluded to, and remain practically the same to this day. They show wise foresight on the part of the founders of the Federation, and may be divided into two classes:—

a. Literature, including Essays and Papers.

b. Examinations and granting of Certificates.

As a result we have to-day a literature of our own of a more or less scientific nature in an available form, and accessible to all, consisting of the Journal published by the Federation. The ninth volume has just been issued, and I trust that the next volume, the matter to be contained in which will come up for your consideration to-day, will not fall short of any of its predecessors in interest or importance.

I sincerely venture to hope that when the new Constitution has been established one of the main objects of the central body, wherever that may be placed, will be the formation of

a Library embracing all known works bearing on Insurance business in all its aspects ; that all books and papers will be accessible to every member and associate, and that every encouragement will be given them to make use of such Library.

In regard to examinations and certificates, there can be no question as to their value or as to the interest they have created amongst the younger members of our staffs. In this connection, may I be permitted to refer to the remarks made by Mr. Ostler in his address at Manchester in 1897? In that, the first Presidential address, he said:—"The important questions for us are whether our younger men would choose to avail themselves of such an opportunity in sufficient number and with sufficient spirit to ensure success for the scheme, and whether we can secure for them the kind of encouragement of their senior officers. Certainly it would be better not to attempt such an enterprise if it would be taken up in only a half-hearted way, and it would be wiser to wait rather than to make a false start."

Subsequent results have fully justified the policy laid down in such a modest way ten years ago, and the organizers of the scheme must find substantial reward in the fact that in the recent examinations we have had 243 candidates submitting 843 papers in 30 subjects. Since the present curricula were brought into operation in 1902, that is to say, in five years, 3770 papers have passed through the hands of the Examiners, and the report of the Examiners' Committee dealing with Home and Colonial examinations should afford great satisfaction to all concerned.

To my mind the question is how we can make these Examinations of real value to those participating in them and to the business generally, and with that object in view we should consider our present-day conditions and requirements. Narrowing these down as much as possible, it seems to me that there are two main factors, the first being how to secure business, and the second, how to select that business in such a way as to make it profitable.

As to the first, it is obvious that we must obtain business

or our existence is at stake, and the man who succeeds in that direction is a valuable asset. My predecessor said that men were not born Underwriters, but I am inclined to think that the man who succeeds in obtaining Insurance business is to the manner born. He must be endowed with both energy and tact, but at the same time much can be done by the cultivation of his faculties and by training to make him a perfect success, and I look to the benefits which a complete library of Insurance literature from all parts of the world would confer as a valuable assistance to such a man in his career. Moreover, it might be worth while considering whether the reading of papers and the setting of examinations tending towards the cultivation of method and system would not be of very material assistance in this direction, for, depend upon it, much business is obtained, and honourably and legitimately obtained, by such means, and much business lost by want of them.

Regarding the second point, it is equally obvious that any amount of business obtained, if not profitable, is worthless, and therefore any education enabling us to select our business properly is of the utmost importance. In these days of scientific changes in the processes of manufacture, of the application of electricity in every direction, and of the development of chemical knowledge, how can this object be best attained? Moreover, the addition of London and Liverpool to our number widens the scope of our usefulness by bringing in a very large number of those who are interested in Foreign work. Foreign business so-called, including Indian and Colonial interests, forms a very considerable proportion of Insurance business in all departments, and I hope that something may, in course of time, be done to encourage those who are employed in it.

Officials well versed in Foreign business will, I trust, be added to the Examiners Committee, and may I say that if possible it would be of great advantage to encourage the study of Foreign languages—a point in which our staffs generally are particularly deficient. These are weighty matters, which I have no doubt will receive most profound considera-

tion at your hands ; but on one main point I am sure you will agree with me, and that is—we must have education, enlightenment, knowledge, and that it is our duty to make these as accessible to the rising generation as it is possible to make them.

The growing needs of a business which becomes more technical and difficult year by year demand highly trained experts and officials, and the Federation is well calculated by its machinery to supply that demand. At least it should be our effort to provide the means whereby candidates can best qualify themselves for the important duties which lie before them, and I would point out that the benefits are not for the candidates alone. No doubt the chances of those amongst them who show ability coupled with tact, method, and individuality will be vastly improved ; but the Companies will also benefit by the greater knowledge and experience of their officials, and the community at large will benefit by the scientific and efficient handling of those interests which they commit to our care.

I have touched briefly on the original hopes and on the attainments, as well as on what I trust may be the future aims of this body, whether you call it by the name of the Federation of Insurance Institutes or by any other name ; but before concluding it is right that some reference should be made to our relations with the Colonies.

At the present time we have in affiliated membership the Institutes of Montreal, Toronto, New Zealand, South Africa, and Victoria. Our journals are open to receive certain Colonial papers, and the Colonial Institutes receive our journals. Acting as a Central Organization, we may endorse the certificates of those affiliated Colonial Institutes who submit their examination schemes and papers to us. The value of this is apparent and mutual. It secures that the value of certificates shall be maintained at a certain level, and those who possess such certificates may some day find it to be a material benefit to be able to use them either in the Colonies or in the Mother Country. The Colonial Institutes highly appreciate their affiliation with us, and it is gratifying

to me to have the opportunity of proclaiming our own appreciation of their affiliated membership.

I feel that in what has been laid before you I have failed to convey all that is in my mind regarding the future of this Institution, and I must add, therefore, that in my opinion our opportunities for doing good are infinite, and that I believe our prospects of success are in every way promising. I have the greatest faith in our future, but we must enlist the sympathy and help of new hands. There is much work remaining to be done, and whilst the older workers will naturally wish to enter upon their well-earned rest, new ones must take their place; but so long as our race is inspired by the same humane feelings and the same sense of duty as have always characterised it, I have every confidence that willing helpers will be found to carry on the good work which you have inaugurated and successfully maintained.

THE INSURANCE CLERKS' ORPHANAGE.

REPORT OF THE GENERAL COMMITTEE TO THE FIFTH ANNUAL
GENERAL MEETING OF MEMBERS, TO BE HELD AT THE
REGISTERED OFFICE OF THE INSTITUTION, 65 WATLING
STREET, E.C., ON TUESDAY, 15TH DAY OF OCTOBER, 1907,
AT 4.45 O'CLOCK P.M.

THE General Committee have much pleasure in submitting their Fifth Annual Report to the members of the Orphanage, together with Account and Balance Sheet made up to the 30th March, 1907.

The total amount received during the year was £2311 3s. 4d., being an increase of £365 7s. 2d. on the figures of the previous year. In accordance with the Articles of Association, the Life Membership Subscriptions and all Donations of £20 and upwards, amounting together to £937 16s., have been carried to the Capital Account, increasing that account to £8082 16s. 7d.

The other receipts, consisting of Annual Membership Subscriptions, Donations of under £20 each, and Interest, amounted to £1373 7s. 4d., as against £1246 10s. 2d. in the previous year, and represent revenue.

The balance of Income and Expenditure for the year is £4159 18s., as compared with £3412 4s. in the previous year.

Life Membership Subscriptions of £75 12s. were received from 16 new Life Members and from 4 Annual Members who had decided to commute their payments. Annual Members contributed £746 6s., of which £50 9s. represents the subscriptions of 175 new members, the balance being renewed subscriptions.

During the year 191 new members were admitted, and the total membership stands at 2626.

Entertainments and other social functions resulted again in substantial assistance being rendered, while they further served

the useful purpose of helping to sustain interest in the Orphanage. The General Committee desire in particular to acknowledge, with thanks, contributions from the following sources:—

Birmingham Insurance Smoking Concert	- £20	4	0
Commercial Union Assurance Company, Staff Smoking Concert	- - - - -	5	8 0
North British and Mercantile Insurance Com- pany, Staff Smoking Concert	- - - - -	4	9 0
Phoenix Fire Office, Staff Smoking Concert	-	14	12 0
Phoenix Fire Office, Staff Swimming Club	-	3	7 6

During the year the Alliance Assurance Company, the Ocean Accident & Guarantee Corporation, and the Royal Exchange Assurance contributed £100 each, and the Warsaw Fire Office £50.

Since the institution of the Orphanage 22 Companies have contributed the following Donations:—

Alliance Assurance Company	- - - - -	£100
Atlas Assurance Company	- - - - -	100
Caledonian Insurance Company	- - - - -	100
Commercial Union Insurance Company	- - - - -	100
County Fire Office	- - - - -	100
Guardian Assurance Company	- - - - -	100
Liverpool and London and Globe Insurance Company	- - - - -	100
London & Lancashire Fire Insurance Company	- - - - -	100
Northern Assurance Company	- - - - -	100
Norwich Union Fire Insurance Society	- - - - -	100
Norwich Union Mutual Life Insurance Society	- - - - -	100
Ocean Accident & Guarantee Corporation, Limited	- - - - -	100
Phoenix Fire Office	- - - - -	100
Provident Life Office	- - - - -	100
Royal Exchange Assurance	- - - - -	100
Scottish Union and National Insurance Company	- - - - -	100
Sun Fire Office	- - - - -	100
Union Assurance Society	- - - - -	100
Westminster Fire Office	- - - - -	100
Warsaw Fire Office	- - - - -	50
Essex & Suffolk Equitable Fire Insurance Company	- - - - -	26 5s.
State Fire Insurance Company	- - - - -	21

In addition to the foregoing, the General Committee thankfully acknowledge personal contributions from directors of various offices.

The total expenditure amounted to £625 13s. 4d., of which £528 10s. was for grants on account of orphans, the balance of the expenditure, £97 3s. 4d., representing working expenses.

The sum of £1714 15s. 2d. was invested during the year, making the total cost of investments of the Orphanage £11,895 11s. 10d., as against a market value, on 30th March, 1907, of £11,334 13s. 2d.

In the course of the year 10 children were admitted to the benefits of the Orphanage and at 30th March last 24 children in all were receiving such benefits. A short summary of the cases is appended.

The General Committee, while they record with satisfaction the steady progress of the Institution, feel that its increasing usefulness should have commended its objects and support more strongly than it has to those in whose interests the Orphanage was originated.

In the course of the year applications for assistance were regretfully refused by the General Committee in pursuance of the policy of reserving the benefits of the Institution strictly for the children of Members.

The General Committee tender their thanks to the members of the respective Local Committees and to the Collectors in the various offices, to whose energy the present position of the Institution is largely due.

The General Committee also tender their acknowledgments to the Honorary Auditors for their services, to the Committee of the London Salvage Corps for the free use of their premises, and to the Insurance Press for gratuitous advertisements and publication of information respecting the Orphanage.

The following members of the General Committee retire in accordance with the Articles of Association, and, being eligible, offer themselves for re-election, viz. :—Messrs. G. W. Mannering, C. E. Noverre, E. Roger Owen, J. Powell, A. J. Relton and H. L. Riseley.

The retiring Auditors, Messrs. Price, Waterhouse, & Co., being eligible, offer themselves for re-election.

SAML. J. PIPKIN, *Chairman.*

26th September, 1907.

THE FOLLOWING STATEMENT SHOWS THE PROGRESS OF THE ORPHANAGE :—

Year ending 31st March.	Number of Members.	SUBSCRIPTIONS AND DONATIONS, &c.							EXPENDITURE.		Balance at end of each year—Cap- ital and Revenue. £		
		Life Members. £	Donations over £20. £	Total to Capital. £	Annual Members. £	Donations under £20 and Sub- scriptions. £	Interest. £	Total to Revenue £	Total of all Income. £	Grants.		Working Expenses. £	
										£			£
1903	2,007	3,412	1,009	4,421	629	411	24	1,064	5,486	8	221	5,256	
1904	2,304	531	922	1,453	683	169	138	990	2,443	72	125	7,503	
1905	2,527	143	438	581	719	139	205	1,063	1,645	118	145	8,885	
1906	2,604	166	523	689	771	209	266	1,246	1,935	219	43	10,657	
1907	2,626	75	882	937	746	272	355	1,373	2,311	528	97	12,243	

PARTICULARS OF CASES RECEIVING THE BENEFITS OF THE INSURANCE CLERKS' ORPHANAGE
ON 31st MARCH, 1907.

Admitted.	Sex.	Born.	Father.
March 11th, 1903	Boy	December 6th, 1896	Clerk, Sun, Head Office.
July 8th, 1903	Boy	July 17th, 1892	Clerk, Westminster Fire, Head Office.
July 8th, 1903	Girl	March 19th, 1895	Clerk, Westminster Fire, Head Office.
June 8th, 1904	Boy	May 13th, 1898	Clerk, Westminster Fire, Head Office.
January 11th, 1905	Girl	December 23rd, 1898	Clerk, British Law, Head Office.
February 9th, 1905	Boy	October 25th, 1896	Clerk, N. B. & M., Head Office.
November 8th, 1905	Girl	March 19th, 1895	Clerk, Norwich Union Life, Bristol.
November 8th, 1905	Girl	September 7th, 1898	Clerk, Norwich Union Life, Bristol.
December 13th, 1905	Boy	January 6th, 1897	Inspector, Provident Life & County Fire, Head Office.
December 13th, 1905	Boy	November 16th, 1898	Inspector, Provident Life & County Fire, Head Office.
December 13th, 1905	Girl	March 2nd, 1896	Clerk, Alliance Marine, Liverpool.
December 13th, 1905	Boy	February 6th, 1899	Clerk, Alliance Marine, Liverpool.
December 13th, 1905	Boy	August 27th, 1897	Clerk, Alliance Marine, Liverpool.
December 13th, 1905	Boy	January 30th, 1900	Inspector, Provident Life & County Fire, Head Office.
March 14th, 1906	Boy	November 6th, 1896	Branch Manager, Com. Union, Belfast.
May 9th, 1906	Boy	November 6th, 1896	Branch Manager, Com. Union, Belfast.
May 9th, 1906	Girl	May 31st, 1895	Clerk, Plate Glass Insurance Co., London.
May 9th, 1906	Girl	July 18th, 1896	Clerk, Plate Glass Insurance Co., London.
May 9th, 1906	Boy	September 15th, 1898	Clerk, Sun, Head Office.
May 9th, 1906	Boy	January 6th, 1900	Clerk, Phoenix, Head Office.
September 12th, 1906	Girl	September 29th, 1895	Local Secretary, Gresham Life, Liverpool.
November 14th, 1906	Boy	July 18th, 1896	Local Secretary, Gresham Life, Liverpool.
November 14th, 1906	Girl	July 28th, 1899	Local Secretary, Gresham Life, Liverpool.
November 14th, 1906	Girl	November 11th, 1900	Local Secretary, Gresham Life, Liverpool.
March 20th 1907	Boy	November 29th, 1899	District Manager, State Fire, Leeds.

THE INSURANCE CLERKS' ORPHANAGE.

INCOME and EXPENDITURE ACCOUNT for the Year ending 30th MARCH, 1907.

INCOME.		EXPENDITURE.	
To Balance brought forward from last Account	£3,412 4 0	By Transfer to General Capital Account in accordance with the Articles of Association of the Orphanage	£987 16 0
„ Subscriptions from Life Members	£75 12 0	„ Working Expenses, Stationery, Printing, Postages and Ficties, &c.	97 3 4
„ Donations of £20 and upwards	512 4 0	„ Grants	523 10 0
„ Donations from Insurance Companies	350 0 0	„ Balance carried to Balance Sheet	4,159 18 0
„ Annual Subscriptions from Members	£746 6 0		
„ Donations under £20	272 2 7		
„ Interest on Investments and on Money on Deposit	354 18 9		
	<u>1,373 7 4</u>		
	£5,723 7 4		<u>£5,723 7 4</u>

BALANCE SHEET, 30th MARCH, 1907.

To General Capital Account as at 31st March, 1906	...	£7,145	0	7
Add Amount received during the Year, being Life Subscriptions, and Donations of £20 and upwards	...	937	16	0
				<u>£8,082 16 7</u>
„ Balance of Income and Expenditure Account	...	...	4,159	18 0
„ Outstanding Accounts	...	...	...	1 6 3

£12,244 0 10

By Investments at cost :—				
£500 2½ per Cent. Consols	...	£5,055	7	5
£1016 16s. Birmingham Corporation 3 per Cent. Stock	...	1,001	2	3
£500 New South Wales 3½ per Cent. 1918 Stock	...	491	18	6
£500 London, Brighton & South Coast Railway 5 per Cent. Consolidated Preference Stock	...	697	18	3
£500 North-Eastern Railway 3 per Cent. Debenture Stock	...	487	7	9
£1600 Cape 3½ per Cent. Inscribed Stock	...	1,436	8	0
£1300 Natal 3½ per Cent. Consolidated Stock	...	1,253	2	0
£500 London County 3 per Cent. Consolidated Stock	...	465	7	3
£500 New South Wales 3½ per Cent. New Inscribed Stock, 1930-1960	...	498	3	6
£500 Great Central and Midland 3½ per Cent. Guaranteed Stock	...	518	16	11
				<u>£11,895 11 10</u>
„ Cash at Bank, Current Account	...	£291	10	11
„ „ in hand	...	4	19	7
„ „ in hands of Local Committees	...	51	18	6
				<u>348 9 0</u>
				<u>£12,244 0 10</u>

AUDITORS' CERTIFICATE AND REPORT.

In accordance with the provisions of the Companies Act, 1900, we certify that all our requirements as Auditors have been complied with.

We have examined the above account of Income and Expenditure for the year ended 30th March, 1907, and the Balance Sheet as at that date with the books and vouchers of the Institution, and report to the Members that in our opinion the Balance Sheet is properly drawn up so as to exhibit a true and correct view of the state of the Institution's affairs, as shown by the books.

We have verified the Investments appearing in the Balance Sheet.

6th June, 1907.

PRICE, WATERHOUSE & CO., Auditors.

THE FEDERATION OF INSURANCE INSTITUTES OF GREAT BRITAIN AND IRELAND.

Founded 12th March, 1897. Constitution agreed to, 12th June, 1903.

CONSTITUTION.

1. The organisation shall be called "THE FEDERATION OF TITLE.
INSURANCE INSTITUTES OF GREAT BRITAIN AND IRELAND."

2. The objects of the Federation are to encourage the study of Objects.
all subjects bearing on every branch of Insurance, to promote the
technical education of junior Insurance officials, and to do all such
things as may be deemed desirable to advance the welfare and
efficiency of the Insurance profession.

3. The Federation shall consist of Institutes, Associations, or Member-
Societies in Great Britain and Ireland established for the above-ship.
named purposes.

4. The Institutes now forming the membership of the Federa-
tion are the following, viz. :—

The Insurance Institute, Manchester.
The Insurance and Actuarial Society of Glasgow.
The Insurance Association of Manchester.
The Insurance Institute of Ireland.
The Norwich Insurance Institute.
The Birmingham Insurance Institute.
The Insurance Institute of Yorkshire.
The Insurance Institute of Bristol.
The Insurance Institute of Newcastle-upon-Tyne.
The Nottingham Insurance Institute.
The Insurance Society of Edinburgh.

5. Insurance Institutes established abroad or in any of the
Colonies or Dominions of the British Empire may be affiliated

with the Federation on such terms and conditions as may be provided by the Constitution and Bye-laws, but shall have no control in the management.

6. The Institutes now affiliated with the Federation are :—

The Insurance Institute of Toronto.

The Insurance Institute of New Zealand

The Insurance Institute of Montreal.

The Insurance Institute of South Africa.

7. The admission of new Institutes to the Federation, or of Institutes applying for affiliation, shall be by the unanimous vote of the Conference.

8. Subscribers of not less than One Guinea per annum to the Funds of the Federation shall be eligible as Honorary Members. They shall be entitled to two copies of the "Journal" for each guinea subscribed, and a list of all Honorary Members shall be published in the "Journal" each year.

Operations. 9. The operations of the Federation shall be regulated by an Annual Conference and an Executive Committee elected thereat, with such Special and Sub-committees (the Honorary Secretaries of which shall be appointed by the Conference) as may from time to time be determined upon, and may include

- (a) The publication of a "Journal,"
- (b) The holding of Examinations,
- (c) The offering of Prizes for essays or research in any subject bearing on Insurance business,
- (d) The formation of a Library of Insurance works,
- (e) The encouragement and support of the Insurance Clerks' Orphanage and/or other charitable institution which may commend itself to the Conference, or
- (f) Any other matter which in the opinion of the Conference may be considered desirable for the general welfare of the Federation or the Insurance profession.

Office-bearers. 10. The Office-bearers shall consist of a President, an Honorary Treasurer, and a Secretary, and of the Honorary Secretaries to all Special or Sub-committees, and shall be elected annually by the Conference, which shall also fix the remuneration of the Secretary. It shall be competent to the Conference to delegate to any Special or Sub-committee the election of one of its number as Honorary Secretary to such Special or Sub-committee.

Executive Committee. 11. The Executive Committee shall consist of two Delegates from each Institute, Association, or Society embraced in the Federation

in full membership, together with the Honorary Secretaries to all Special and Sub-committees and any others who may be appointed from time to time by the Annual Conference.

12. Any vacancy occurring in the Office-bearers or Executive Vacancies shall be filled up by the Executive Committee at a meeting specially summoned for that purpose, and the appointments so made may continue in force until the next Conference.

13. The Examiners shall be elected annually by the Conference. Examiners.

14. The Annual Conference shall consist of the Office-bearers, Annual the President of each Institute, all Past Presidents, the Examiners Conference, of Special and Sub-committees, the Founder of the Insurance Clerks' Orphanage (for his lifetime), the Chairman for the time being of the Orphanage, the Honorary Secretary of the Institute at which the Conference is held, and two Delegates from each Institute.

15. At all Meetings of the Conference and the Executive Committee the Chair will be taken by the President, or, in his absence, by one of the Past Presidents, whom failing the Chairman shall be elected from among those present.

16. All voting at the Annual Conference and at meetings of the Voting Executive Committee shall be by Institutes, one vote only being allowed to each Institute, the President having a casting but not a deliberative vote.

17. The Conference shall not exercise any authority or control Authority over any Institute, Association, or Society embraced in the Federation except in matters directly relating to the interests of the of Conference. Federation, and if any question arise in connection with this Article it shall be decided by a vote of the Conference, two-thirds majority to decide the question, which must appear in the Agenda.

18. It shall be in the province of the Federation in Conference assembled to censure any Institute, Association, or Society, or terminate its membership, should it fail to effectively maintain the objects above set forth, or introduce any practice deemed to be inconsistent therewith, or otherwise infringe any part of this Constitution, or the membership of which may be deemed to be no longer advantageous to the Federation.

19. The duties of the Secretary shall be to keep the Minutes of Duties of the Executive Committee and of the Conference, to prepare the Secretary. Agenda for the same, to send out Notices of all meetings, to assist all Sub-committees when required in any of their duties, to con-

duct the correspondence of the Federation, and generally to do all such things as usually pertain to the duties of his office.

Honorary Treasurer. 20. The Honorary Treasurer shall receive and give receipts for all moneys due to the Federation, and shall pay all just debts and demands owing by the Federation, and shall render an account of the same each year to the Annual Conference, such account to be made up to the 31st December in each year, and to be printed and sent by the Secretary to the Delegates a clear week before the Annual Conference.

Funds. 21. The funds of the Federation shall be derived from

- (a) A levy laid on each of the Institutes, Associations, or Societies embraced in the Federation, the amount of such levy to be decided each year by vote of the Conference,
- (b) The profits accruing from the sale of the "Journal," the price of which shall be fixed each year for Members and Non-Members by the Conference,
- (c) Subscriptions received from affiliated Institutes, from Insurance Offices, and from Honorary Members.

22. The funds of the Federation may be used for any of the following purposes:—

- (a) Printing of the "Journal" and of all reports, circulars, certificates, or other documents authorised by the Conference or Executive.
- (b) Salaries of the Secretary or other officials authorised by the Conference.
- (c) Any other object which may from time to time be ordered by the Conference as conducive to the well-being of the Federation in promoting its operations, as defined in Rule 9.

Meetings. 23. The Conference shall meet each year in the month of May or June in such convenient centre as may be decided by the Conference from year to year.

24. The Executive Committee shall meet at such times as may be required by the necessities of business to be transacted, and the place of meeting shall be left to the decision of the President for the time being of the Federation.

25. Fourteen clear days' notice shall be given of all meetings of the Annual Conference and of the Executive, and the Notice calling the meeting shall state the principal business which is to be brought forward; but after the business stated

in the Notice convening the meeting has been finished, it will be competent for any Delegate to introduce any other business for discussion only with the consent of a majority of votes.

26. The Executive Committee shall be called at any time by the Secretary on a requisition from three or more Institutes, and such requisition must state the object for which the meeting is requested. At such Special Meetings of the Executive, the only business which may be transacted will be that stated on the Notice as the special business for which the meeting has been called.

27. The meetings of all Special and Sub-committees shall be called by the Honorary Secretary of each at such times and places as may be most convenient.

28. It will be the duty of the Executive Committee to exercise ^{Duties of} during the year such control over the work of the Federation and of ^{Executive.} all Sub-committees as may be desirable, to assist and direct when necessary such work, to deal with all matters on which an immediate decision may be required in the interest of the Federation, and to report to Conference.

29. Reports of all Special and Sub-committees to be submitted ^{Reports} to the Conference shall be printed and in the hands of Honorary ^{for Con-} Secretaries of each Institute embraced in the Federation and ^{ference.} Delegates one clear week before the date of meeting of the Conference.

30. The Publications Sub-committee shall submit to the Conference each year a printed report of its operations, with a list of proposed papers for the forthcoming volume of the "Journal," and any other suggestions connected therewith.

31. Subject to the provisions of the Constitution and Bye-laws and for the purpose of promoting the objects of the Federation, the Conference shall cause Examinations to be held at such places as it may think fit, and shall prepare and publish Rules to regulate such Examinations, and to define the cases and circumstances under which the said Examinations shall severally apply, the subjects which they shall respectively comprise, the fees, if any, which shall be paid or deposited by candidates in respect of such Examinations, and the nature of the certificates, if any, to be granted to successful candidates. It may vary or rescind from time to time any of the said Rules of Examination, or add thereto, in any such manner as it may think fit, and may delegate to any Committees or Sub-committees such powers and instructions as may be necessary to carry out these objects.

32. The Honorary Secretaries to the Examiners shall submit to the Conference each year a printed report of the results of the examinations, with recommendations for the examinations in the following year, and any other suggestions connected therewith.

Audit. 33. The Treasurer's statement of accounts shall be audited each year by two honorary auditors to be elected by the Conference annually.

Bye-laws. 34. The Conference shall make and alter such Bye-laws (not inconsistent with the Constitution) as may from time to time be found necessary, but two months' notice of any Bye-law to be proposed by any Institute, or of any alteration in an existing Bye-law, must be given to the Secretary, who shall forthwith intimate the same to the Honorary Secretary of each Institute embraced in the Federation.

35. All Bye-laws and alterations thereof must be sanctioned and approved by a vote of the Institutes represented at the Conference, a majority of two-thirds being necessary.

Alteration of Constitution. 36. No alteration or addition shall be made to the Constitution except at the Annual Conference, and two calendar months' notice must be given to the Secretary in writing of any such proposed alteration or addition, and it will be the duty of the Secretary to send copies of such proposed alteration or addition forthwith to the Honorary Secretary of each Institute embraced in the Federation.

37. No alteration or addition to the Constitution shall be made unless sanctioned by a majority of two-thirds on a vote of Conference.

BYE-LAWS.

1. Institutes affiliated with the Federation shall be charged an annual subscription to be determined by Conference, and shall be entitled to one copy of the "Journal" each year per member at the same price as is charged to the members of Institutes constituting the Federation plus the cost of carriage.

2. Should a vacancy occur in any Special or Sub-committee of the Federation, or Examiners, it will be competent for such Special or Sub-committee to fill up the vacancy till the date of the next Conference.

3. The President and Secretary of the Federation for the time being shall be *ex-officio* members of all Committees and Special or Sub-committees of the Federation.

4. Should the Delegate duly appointed to attend a meeting of the Executive Committee or Conference be unable to attend, the Council of the Institute may send, as a substitute, any member of the Institute.

5. At meetings of the Executive Committee, six shall form a quorum provided that they represent not less than four Institutes. The quorum for all Special or Sub-committees shall be decided by each.

6. Candidates for the Examinations in the Fire Department must be in the employ of an Insurance Company (otherwise than a Fire Insurance Company which is not a member of the Fire Offices Committee).

7. The names of all Offices subscribing to the Federation shall be published in the "Journal" annually, also the results of the Examinations and the Examination papers.

8. Each Institute is entitled to have one copy of the "Journal" for each of its members at the reduced price as fixed by the Conference annually, it being a condition of obtaining such copies at the reduced price that no member of any Institute shall be charged more than the reduced price, as fixed by the Conference, for his copy, and that no additional copies, whether applied for by members of Institutes or others, may be supplied at less than the published price.

9. The higher officers of Insurance Companies and representatives from any affiliated Institute or any other person of distinction may be invited to the Conference by the President for the time being with the consent of the Executive.



•• *For all statements made, and opinions expressed,
in the papers of this volume, the respective
writers are alone responsible.*

ASSIGNATIONS OF LIFE POLICIES AND LEGAL DECISIONS THEREON.

By A. H. B. CONSTABLE, Advocate.

*A Paper read before the Insurance Society of Edinburgh,
22nd January, 1907.*

THE subject suggested to me for a lecture to-night, viz., "Assignations of Life Policies," though apparently somewhat restricted, might easily, without doing serious violence to the title, be extended to wide limits. An assignation may be a voluntary act; or it may be operated by law as in the case of marriage, death, or bankruptcy, or by the use of legal diligence. If it takes the form of a voluntary act it may be onerous or gratuitous; *inter vivos* or *mortis causa*; absolute, as in a sale; or in security, as in a pledge or mortgage; or in trust, as in a settlement. Again, whatever be the character of the assignation, questions may arise either between the granter—who is termed in Scotland the cedent, and in England the assignor—and the grantee, who is termed the assignee, or between the assignee and the Insurance Company, or between competing assignees, or between the assignee on the one hand and the trustee in bankruptcy or creditors of the cedent using diligence on the other; and these questions may depend not only on the effects of the assignation *per se*, but also on conditions regulating the issue of the policy. Moreover, some account must almost necessarily be given of the differences between the laws of Scotland and of England, and as to what law is applicable in cases where policies are assigned and dealt with outside the country where they were issued; because insurance transactions are largely independent of national boundaries. If, therefore, the lecture is to be fairly exhaustive—as I should like it to be—and is not to assume an acquaintance with the general law, which I am scarcely entitled

to expect, it is obvious that strict limits must be set to the discussion. I do not propose to go at length into questions of disputed ownership, and of the conditions and validity of policies, because these concern the issue rather than the transfer of policies; nor do I propose to discuss questions of trust, bankruptcy, diligence, and donation, because it is rather as an accident that these questions arise in connection with policies of insurance. I shall endeavour as far as possible to confine my remarks to questions which specially arise out of the assignations of life policies by the voluntary act of the cedent, whether these take the form of absolute transfers or transfers in security. In discussing them I must necessarily, for the reasons above stated, refer to some extent to English law and English decisions, but it is impossible for me, and you will not I suppose expect me, to do so exhaustively.

I. GENERAL RULES OF ASSIGNATION.

Life policies form a particular example of a wide class of things to which we apply the term moveable rights, and which are known to the law of England as *choses* in action (*Ex parte Ibbetson*, 1878, 8 Ch. D. 519), which are transferred by assignation, or, as the English law terms it, assignment; and it will perhaps be convenient if, before I consider the special decisions on the transfer of life policies, I give a sketch of the principles which regulate assignations generally both in Scotland and in England.

Requisites
of complete
transfer.

In Scotland the general rule is that there are two things necessary to complete the transfer of a moveable right, (1) a proper deed of assignation, and (2) intimation thereof to the debtor in the obligation. There are, of course, exceptions to the rule. By the law merchant bills of exchange and other negotiable instruments are completely transferred by simple endorsement and delivery; and in other cases where goods are represented by what are known in law as documents of title, such as delivery orders and warehouse-keeper's certificates, the right to the goods passes by bare delivery of the document, although in that case intimation is necessary in order to complete the right. For our present purpose, however, these exceptions to the rule of what is necessary to complete the transfer of a moveable right may be disregarded.

With regard to the form of the instrument of transfer, the *Deed of Transmission of Moveable Property Act, 1862* (25 & 26 Vict., cap. 85), provides a short form of assignation, applicable to all kinds of debts and obligations, expressly including policies of insurance. But no particular form of words is necessary. "Any words, authority, or directions which, if fairly carried out, will operate a transference, are sufficient to make an assignation" (per Inglis, L.-J.-C., in *Carter v. M'Intosh*, 1862, 24 D. 925).

With regard to intimation, two statutory methods are provided *Intimation.* by the Act of 1862 above mentioned—one by the delivery by a notary of a certified copy of the assignation in presence of witnesses, followed by a notarial certificate in statutory form; and the other by the transmission by post of a certified copy of the assignation by the holder thereof, followed by a written acknowledgment of the receipt thereof by the person to whom the copy has been transmitted. Such statutory forms are not, however, essential. Judicial intimation is sufficient, as in the case where the assignee charges the debtor in the obligation or cites him in an action for payment. It is also sufficient if the debtor in the obligation has concurred in the assignation, or clearly acknowledged the assignee's right in any way. But verbal communings or mere knowledge of the assignation are not enough in a question between competing assignees, although they may put the debtor in bad faith in a question between him and the assignee. (Bell's Com., II. 17.)

Delivery of the document of transfer is not necessary to complete the right (*Bell's Pr.*, sect. 1462; *Jarvie's Trs. v. Jarvie's Trs.*, 1887, 14 R. 411). Nor is it equivalent to intimation. It is, of course, binding upon the cedent and his representatives. But it is of no avail against third parties who first intimate to, or use diligence in the hands of, the debtor (*Ersk. III. 5, 3*).

The effect of the assignation is to divest the cedent, and to *General effect of assignation.* invest the assignee as at the date of intimation, which forms the criterion of preference among competitors for the right or debt assigned. If the debtor after intimation pays to the original creditor, he is liable to pay a second time to the assignee. On the other hand, the debtor has the same rights against the assignee as he would have had against the cedent. The rights of the assignee are summed up in the maxim "*assignatus utitur jure auctoris.*"

To this general rule there are exceptions, as in the case of

negotiable instruments in the hands of onerous holders; but for the present purpose these need not be considered. It should further be kept in mind that the rule itself is only applicable in a question with the debtor in the obligation, and not in questions with third parties (*Redfearn v. Somervail*, 1813, 1 Dow's App. 50). So far as the cedent is concerned, there is in every obligation an implied warrandice that the debt is due and that the cedent has a good title to the debt; but there is no warrandice that the debtor is solvent (*Ersk. II. 3, 25; Reid v. Barclay*, 1879, 6 R. 1007).

Assignations in security.

There is an important difference in the rights of an assignee according to whether he holds an *ex facie* absolute title or a title expressly in security. If he holds an absolute assignation, the rule is that though truly a security-holder he is entitled to exercise the full rights of a proprietor by disposing of the right assigned, and to retain the proceeds till all the debts due to him by the debtor are discharged (*Ross, L. C. III., 721; Burns v. Lawrie's Trs.*, 1840, 2 D. 1348; *Hamilton v. Western Bank*, 1856, 19 D. 152), though the receipt of a notice that the reversionary right has been assigned to a third party renders the rights of the creditor, in respect of debt subsequently incurred, subject to the interest of such third party (*Hopkinson v. Rolt*, 1861, 9 H.L.C. 514; *National Bank v. Union Bank*, 1885, 13 R. 380, 14 R.H.L. 1). If, on the other hand, the assignee holds an assignation expressly in security of a certain debt, he has no implied right of disposal, and his right of retention is limited to the debt specified in the assignation (*National Bank v. Forbes*, 1858, 21 D. 79). There is nothing, however, in the case of an assignation in security of a moveable right—as there is in the case of a bond and disposition of heritage in security—to prevent the security being made available for future as well as for existing debts. In every case the question whether the security extends to future advances depends upon the terms of the assignation and on the arrangements between the parties under which subsequent advances are made (*Olyne v. Dunnet*, 1833, 11 S. 791, Macl. and Rob. 28).

Unassignable contracts.

It only remains to be noticed that certain rights are incapable of being validly assigned at all. These exceptions may arise from considerations of public policy, which for example prohibit the assignation of Government salaries and pensions to public officers; and they also arise in mutual contracts, at any rate where these are of such a nature as to involve *delectus personee*. In such cases

one of the contracting parties cannot transfer to an assignee the right to sue on the original contract (*Boulton v. Jones*, 1857, 2 H. & N. 564; *Grierson Oldham & Co., Ltd., v. Forbes Maxwell & Co., Ltd.*, 1895, 22 R. 812). These exceptions have no application to the assignation of a life policy by the person in right of it, but they apply, as we shall see, where an Insurance Company attempts to transfer its obligations, as in a sale or amalgamation of its business.

In England the general rule as to the requisites and effect of a complete assignment are substantially the same, although the historical development has been very different. At common law, until the Judicature Act of 1873, the rule was that a *chose* in action was not assignable; but in equity a remedy was given to the assignee provided that he either sued in name of the assignor or called the assignor as a party to the action. It was to remedy this state of matters that the Judicature Act [36 & 37 Vict., cap. 66, sect. 25 (6)] provided that "any absolute assignment by writing under the hand of the assignor (not purporting to be by way of charge only) of any debt or other legal *chose* in action of which express notice in writing shall have been given to the debtor . . . shall be effectual (subject to all equities which would have been entitled to priority over the right of the assignee if this Act had not passed) to pass and transfer the legal right to such debt or *chose* in action from the date of such notice; and all legal and other remedies for the same; and the power to give a good discharge for the same; without the concurrence of the assignor."

The main differences between the laws of Scotland and England apart from the statute seem to be: (a) that in England no written assignment is necessary, an equitable assignment may be constituted by verbal agreement or an equitable charge may be created by mere delivery or pledge of the documents of title to a creditor (Bunyon, 4th ed., 354, 501); (b) that all assignments without consideration are revocable by the assignor; (c) that written notice of the assignment is not necessary: mere knowledge on the part of the debtor is sufficient (Bunyon, 4th ed., 412, 417); and (d) that the holder of an assignment who has given no notice at all seems to be in certain circumstances in a better position than he would be in Scotland. He has no rights against the debtor who pays the debt to the assignor; and his rights may be defeated by a subsequent assignee who first gives notice to the debtor. But his right is good not only against the assignor but against his creditors and trustee in bankruptcy (Bunyon, 4th ed., 371, 407).

Conflict of
laws.

In considering what system of law is applicable to an assignation which happens to be made in a country different from that in which the right of the assignee comes to be enforced, a distinction must be drawn between the contract of transfer—the assignation proper—and the completion of the transfer by intimation. And in the case of the contract of transfer a further distinction must be drawn between questions affecting its construction or general validity and questions affecting simply the form of its execution. To the question of the construction or general validity of the transfer the law applicable is the *lex loci contractus*, the law of the place of contract, which may or may not coincide with the place where the contract is executed. In a question as to the mere formal validity of the deed, it is, however, sufficient that the assignation complies either with the *lex loci actus*, the law of the place where it is executed, or the *lex loci contractus* (*Valery v. Scott*, 1876, 3 R. 905; *Talisker Distillery v. Hamlyn*, 1893, 21 R. 204; H.L. 31).

On the other hand, it has been held that the completion of the right of the assignee by intimation is, like the use of diligence or other forms of process, part of the remedy open to the assignee, and that the validity of such intimation must accordingly be determined by the *lex fori*, the law of the place where the remedy is sought (*Bell's Com.* II. 18; *Don v. Lippman*, 1837, 5 Cl. and Fin. 1; *Donaldson v. Orr*, 1855, 17 D. 1053; *Connal & Co. v. Loder*, 1868, 6 M. 1095). The cases are not, however, all one way, and it has been strongly argued that the necessity for, or sufficiency of, intimation pertains rather to the validity of the assignation than to the remedy of the creditor, and ought therefore to be regulated by the *lex loci contractus* (*Barr's Priv. Internat. Law*, Gillespie's Transl., 605; *Wallace v. Davies*, 1853, 15 D. 693).

II. POLICIES OF ASSURANCE ACT, 1867.

Bearing these general rules in mind, let us turn now to the special consideration of life policies. Assignations of life policies are governed primarily by the Policies of Assurance Act, 1867 (30 & 31 Vict., cap. 144), of which the leading provisions are as follows:—

“I. Any person or corporation now being or hereafter becoming entitled, by assignment or other derivative title, to a policy of life assurance, and possessing at the time of action brought the right in equity to receive and the right to give an effectual

discharge to the Assurance Company liable under such policy for monies thereby assured or secured, shall be at liberty to sue at law in the name of such person or corporation to recover such monies.

“ III. No assignment made after the passing of this Act of a policy of life assurance shall confer on the assignee therein named, his executors, administrators, or assigns, any right to sue for the amount of such policy, or the monies assured or secured thereby, until a written notice of the date and purport of such assignment shall have been given to the Assurance Company liable under such policy at their principal place of business for the time being, or in case they have two or more principal places of business, then at some one of such principal places of business, either in England or Scotland or Ireland, and the date on which such notice shall be received shall regulate the priority of all claims under any assignment; and a payment *bona fide* made in respect of any policy by any Assurance Company before the date on which such notice shall have been received shall be as valid against the assignee giving such notice as if this Act had not been passed.

“ IV. Every Assurance Company shall, on every policy issued by them after the 30th day of September, 1867, specify their principal place or principal places of business at which notices of assignment may be given in pursuance of this Act.

“ V. Any such assignment may be made either by endorsement on the policy or by a separate instrument in the words or to the effect set forth in the schedule hereto, such endorsement or separate instrument being duly stamped.

“ VI. Every Assurance Company to whom notice shall have been duly given of the assignment of any policy under which they are liable shall, upon the request in writing of any person by whom any such notice was given or signed, or of his executors or administrators, and upon payment in each case of a fee not exceeding 5s., deliver an acknowledgment in writing under the hand of the manager, secretary, treasurer, or other principal officer of the Assurance Company of their receipt of such notice; and every such written acknowledgment, if signed by a person being *de jure* or *de facto* the manager, secretary, treasurer, or other principal officer of the Assurance Company whose acknowledgment the same purports to be, shall be conclusive evidence as against such Assurance Company of their having duly received the notice to which such acknowledgment relates.

"Schedule.

"I, A. B. of &c., in consideration of &c., do hereby assign unto C. D. of &c., his executors, administrators, and assigns the [within] policy of assurance granted, &c. [here describe the policy]. In witness, &c."

Scope of
the Act.

It will be observed that this Act was prior in date to the Act passed in 1873 to legalise the assignment of *chooses* in action in England, and it is evident from its phraseology that it was primarily designed to remedy the disabilities under which an assignee to a life policy in England lay even in equity. The Act, however, applies to both countries. It does not apply to Post Office assurances and annuities, nor to policies under the Friendly Societies Acts (Sect. 8), which are both regulated by special statutes (27 & 28 Vict., cap. 43; 38 & 39 Vict., cap. 60; 39 & 40 Vict., cap. 32). Under these statutes Friendly Society policies cannot be assigned at all; while Post Office assurances can only be assigned subject to the provisions of the regulating Acts.

It has been decided that the scope of the Act is limited to questions arising between the assignee and the Insurance Company. In questions between an assignor or his trustee or creditors and an assignee, or between competing assignees, the rules of the common law in both countries still apply. This may seem somewhat contrary to the provision of Section 3 that the date of notice shall regulate all claims under any assignment, but so it was held in *Newman v. Newman*, 1885, 28 Ch. D., 674. The facts of this case were rather complicated; but it is sufficient to say that one Brown had obtained an assignation of a policy subsequent to a Mrs. Armstrong, but had first given statutory notice to the Company. It was contended, in a question between Brown and Mrs. Armstrong's representative, that this notice necessarily gave Brown a preference, but North (J.) observed:—"In my opinion that is not the meaning of the statute, which was not intended to affect rights of persons claiming interests in the money outside the Insurance Office."

Conditions
of appli-
cation of
the Act.

In order that an assignment may satisfy statutory requirements in the class of cases to which the Act does apply, four conditions are requisite.

Assigna-
tion in
writing.

First. The assignation must be in writing, either separate or endorsed on the policy. The precise form of the writing is not material. The form given in the statute itself is merely permissive. This condition excludes from the benefit of the Act all

cases in which a policy has been pledged in security of a debt by mere delivery, as it is competent to do in England. Such a deposit is not an assignment within the meaning of the Act, and a Company to which notice of such an equitable mortgage has been given is entitled to refuse payment of the policy until the mortgagee obtains a proper title to enable him to discharge the policy. Thus in *Crossley v. The City of Glasgow Assurance Company*, 1876, 4 Ch. D. 421, a Company which had duly acknowledged receipt of a notice from the person with whom policies had been deposited in security of a debt, was held entitled on the death of the assured to refuse payment to the mortgagee until the latter obtained the consent of the representatives of the assured. This decision was followed in *Webster v. The British Imperial Mutual Life Assurance Company*, 1880, 15 Ch. D. 169. An agreement to assign a policy on request is not an assignment within the meaning of the Act. So it was held in *Spencer v. Clarke*, 1878, 19 Ch. D. 137, where a lender on the security of a policy, failing to get possession of the policy itself, took from the assured a memorandum that he would deposit the policy, and that he undertook to execute an effectual mortgage of it in favour of the lender on request. The lender duly gave notice to the Company, but it was held that he was not the holder of an assignment within the meaning of the Act, and that his notice gave him no preference over a prior encumbrancer, who had been in possession of the policy but had given no notice.

Second. The assignee must have the right in equity to receive and give a discharge for the policy monies. To this end it is necessary that the title under which he holds should expressly or impliedly give him power to discharge the policy on payment of the sum due in the policy. As it has been already pointed out, an absolute assignment imports such power to discharge. In England, under the Conveyancing Act of 1881 (44 & 45 Vict., cap. 41, sec. 22), where a mortgage is made by deed, the mortgagee has also such power; but there is no corresponding provision in Scotland; in which country, accordingly, power of sale and discharge should be expressly conferred by the deed assigning the policy in security.

Third. Notice of the date and purport of the assignment must be given in writing to the head office of the Company. There is no decision as to the terms of the notice, but there seems to be no doubt that intimation in one or other of the methods prescribed by the Transmission of Moveable Property Act of 1862 would be

Assignee's
title to
discharge.

Intimation
in writing.

sufficient. The statutory notice is sufficient for the Company, and, except in the case of bankruptcy (see p. 22, *infra*), it is entitled to pay to the assignee who has first fulfilled the statutory conditions necessary to complete his title and enable him to give a valid discharge. Thus it was held that a verbal notice by an assignee was not sufficient to give him a claim against the Company in competition with that of an assignee who had given written notice in terms of the Act (*in re Young*, 1890, 25 L.R. Ir., 372); and in the case of *in re Haycock's Policy*, 1876, 1 Ch. D. 611, it was held that a Company which had received due notice of mortgage of a policy in 1851 was not bound to pay to a subsequent assignee until evidence was produced that the prior encumbrancer had been satisfied, and was entitled to throw the burden of proving this fact upon the subsequent assignee. On the other hand, the Company is not bound to wait for a statutory notice. A saving clause in Section 3 of the Act protects a payment made in circumstances which would have been sufficient to protect it before the Act was passed.

Stamping
assignation.

Fourth. The assignment must be duly stamped. If this condition is not complied with, not only does the Company lose the protection of the Act of 1867, but by the Stamp Act of 1891 (54 & 55 Vict., cap. 39, sec. 118) it may incur much more serious consequences, because the latter Act provides that unless an assignment of a life policy is duly stamped, it confers no power to give a valid discharge, and it also throws on the person paying under any such assignment responsibility for the duty and penalty. The amount of such stamp in the case of an absolute assignation depends on the price. In the case of a mortgage or assignation in security, it depends not on the value of the policy, but on the amount secured. Where the security is for future advances, special rules are laid down by Section 88 of the Stamp Act 1891, as follows:—(a) Where the total amount to be secured is expressly limited, the assignation is to be charged as if it were a security for the amount so limited; (b) Where such total amount is unlimited the security is only available for such amount as the stamp will cover, and if an advance is made in excess of that amount the assignation is deemed a new and separate instrument from the date of such advance; and (c) Money advanced for keeping up the policy is not to be reckoned as part of the amount in respect of which the assignation is chargeable.

So far as the law of England was concerned, the general effect

of the statute was, as already observed, to materially improve the position and widen the remedy open to an assignee of a policy. So far as the common law of Scotland was concerned, the statute made little change. In the matter of intimation it to a certain extent limited the rights of an assignee by requiring writing, and thus deprived him, in a question with the Company, of the benefit of those equivalents for formal intimation which the common law allowed.

III. TITLE TO ASSIGN.

Apart from the statute the first matter to be considered in the Disputed assignment of a life policy is the title of the cedent, which may be ownership of policy. open to various objections, some of them peculiar to a life policy. The life assured, the person paying the premium, and the person in whose favour the obligation is expressed may be all different; and in such circumstances it may be difficult to determine the true ownership of the policy. In such case it has been said that the material point to be considered is, in favour of whom the beneficial obligation has been undertaken by the Company (*Thomson's Trs. v. Thomson*, 1879, 6 R. 1227; *Hay's Trs. v. Hay*, 1904, 6 F. 978). But in the absence of delivery the person effecting the policy will be preferred. Thus, in *Hadden v. Bryden*, 1899, 1 F. 700, where a policy had been taken out in the name of a boy 18 years old, and was made payable to his heirs, it was held to belong to his father, who had received and retained possession of the document throughout and had paid all the premiums. (See also *Jarvie's Trs. v. Jarvie's Trs.*, 1887, 14 R. 411.) If a person claims right to a policy which *ex facie* bears to be taken out by, and to be payable to another, that other is a trustee, and the person claiming the policy must prove his right by the writ or oath of the trustee as in any other case of trust (*Forrester v. Robson's Trs.*, 1875, 2 R. 755).

Prior to the passing of the Married Women's Policies of Policies Assurance Act, 1880 (43 & 44 Vict., cap. 26), disputes were under frequent with regard to the ownership of policies taken out by Married spouses on the life of either of them, and made payable to the wife Women's Policies of Assurance and her heirs, the question in such cases being complicated by the Act. doctrine of donation between husband and wife, and the irrevocability of such a donation where it constitutes a reasonable provision (*Galloway v. Craig*, 1861, 22 D. 1211, 4 Macq. 267; *Smith v.*

Kerr, 1869, 7 M. 863). In order to remedy these difficulties the Married Women's Policies of Assurance Act provided (a) that if a married woman effected a policy of assurance on her own life or that of her husband, expressed to be for her separate use, it should vest in and be payable to her and her heirs, and should be assignable by her without consent of her husband, and (b) that a policy of assurance effected by any married man on his own life and expressed to be for the benefit of his wife or children, should be deemed a trust for the benefit of his wife and children, and should vest in trust in him and his representatives or in any trustee nominated in the policy or in a separate writing, who should be entitled to discharge the sums secured by the policy. It is impossible to discuss fully the questions raised by that statute, and I may be permitted to refer to a lecture which I delivered some years ago on the subject to the Actuarial Society of Edinburgh ("Transactions," Vol. III., No. 11). So far as the assignability of such a policy is concerned, there is no difficulty in the case of a policy taken out by the wife under Section 1. She has a statutory right to assign it. In the case of a policy taken out by the husband for the benefit of his wife under Section 2, it was held that with the consent of his wife he was in certain circumstances entitled to surrender it (*Schumann v. Scottish Widows' Fund Society*, 1885, 13 R. 678). But it does not follow that he is entitled under all circumstances to surrender or assign it, even with consent of the beneficiary. The contrary was decided in *The Scottish Life Assurance Co., Ltd., v. John Donald, Ltd.*, 1901, 9 S.L.T. 200. In that case a policy effected by a husband on his own life for the benefit of his wife, was, with the consent of the wife, assigned to creditors of the husband in security of a debt, but it was held by Lord Stormonth Darling that the assignation was invalid on the principle given effect to in *Barras v. Scottish Widows' Fund*, 1900, 2 F. 1904, that the wife had no power *stante matrimonio* to discharge the trust in her favour created by the policy. It does not follow that every assignation of such a policy would be invalid. At common law a trustee has power in the course of ordinary trust administration to sell moveable property or pledge it in security of advances (*MacLaren on Wills*, ii., 1186, 1191). But it is obvious that the object and effect of any such assignation must be closely scrutinised.

Insurable
interest.

It is a statutory condition of the validity of a life policy that the person effecting it must have an insurable interest in the life

assured (14 Geo. III., cap. 48). Such interest may arise from contract, debt, or the obligation to support which attaches to certain relationships. It is sufficient that such interest existed at the date when the assurance was effected, and the assignment will be valid though the interest has ceased to exist before the assignment is made (*Dalby v. The India & London Life Insurance Co.*, 1854, 15 C.B. 365; *Law v. The London Indisputable Life Policy Co.*, 1855, 1 K. & J. 223). It is not necessary that the assignee should himself have any insurable interest.

While the holder of a policy of assurance may in the ordinary case freely transfer his right thereto, it need scarcely be pointed out that the debtor company cannot in like manner transfer their obligation without the consent of the creditor in the policy. The question occasionally came up in cases where companies had transferred or amalgamated their business prior to the Life Assurance Acts of 1870, 1871, and 1872 (33 & 34 Vict., cap. 61; 34 & 35 Vict., cap. 58; and 35 & 36 Vict., cap. 41). In these cases it was laid down that novation, in the form of an agreement by the creditor in the policy to accept the new Company as his debtor, must be distinctly proved before the old Company and its assets could be freed (*in re Family Endowment Society*, 1869, 5 Ch. 118; *in re India & London Life Co.*, 1872, 7 Ch. 651). But the matter is now regulated by the Acts in question, which provide (1870 Act, Section 14) that all amalgamations or transfers of the Life Assurance business of one Company to another must receive the sanction of the Court after notice to policy-holders, and that such sanction cannot be given if one-tenth of the policy-holders in value dissent; and (1872 Act, Section 7) that no policy-holder shall be deemed to have abandoned any claim against the original Company, or accepted a new Company as his debtor, unless such arrangement and acceptance have been signified in writing.

IV. REQUISITES OF VALID ASSIGNATION.

We may now pass on to consider the requisites of a valid assignment of a life policy, apart from the statute of 1867. In the law of Scotland it was early held that a policy, like any other obligation or debt, could only be assigned in writing, and that no right to the contents thereof could pass by the mere delivery of the document. In *United Kingdom Life Assurance Company v. Dickson* (1838, 16 S., 1277), the debtor in a cash credit bond

Transfer of
obligation
by insuring
Company.

Whether
writing
necessary.

handed a policy over his life to the bank. He thereafter died in debt to the bank, and the cautioners in the bond having paid up the debt obtained an assignation of the policy from the bank, but they were held to have no right thereto in competition with the executrix of the deceased. It would be no true exception to this rule that the holder of a policy should be able to establish, by proof of delivery coupled with the necessary intention, an effectual *inter vivos* or *mortis causa* donation in a question with the representatives of the donor. Donation has been so established in England (*Amis v. Witt*, 1863, 33 Beav. 619), and I have no doubt could be similarly established in Scotland.

Pledge of
policy in
England.

In England, on the other hand, deposit or pledge of the policy by delivery of the document to a creditor, while it gives no right to sue the Insurance Company under the Act of 1867, may be sufficient to confer a security by way of lien over the contents (*Crossley v. City of Glasgow Assurance Company*, 1876, 4 Ch. D. 421; *Webster v. British Empire Mutual Life Assurance Company*, 1880, 15 Ch. D. 169). But in the absence of agreement, verbal or otherwise, the circumstances must be such as to imply that a security was intended. Apart from such circumstances, mere delivery of the document is no more sufficient in England than it is in Scotland to effect an assignment or confer any right to the proceeds, even in a question with the representatives of the person who made the delivery (*Howes v. Prudential Assurance Company*, 1883, 49 *Law Times*, 133).

Form of
writing.

As to the form of the writing, there is no difficulty in the case of an absolute assignation. It may be in either of the forms given in the Acts of 1862 or 1867, or in any form sufficient to import a transfer. An assignation, when granted by the person assured, should contain a special obligation by the cedent to observe the conditions of the policy, and to do nothing by which the policy may be forfeited, otherwise, in the case, for example, of the policy being voided by the suicide of the assured, the assignee may be left without remedy (*Dormay v. Borrodaile*, 1847, 10 Beav. 335). Many policies now contain the provision that this particular condition shall not be operative against assignees; but there are other conditions with regard to place of residence, occupation, &c., the breach of any of which is equally a ground of forfeiture. The obligations imposed on the cedent by such an undertaking may prove troublesome, but terms of dispensation can always be arranged with the assuring Company.

When the assignation is in security the cedent should be taken bound to keep the policy in force, and in the event of his failing to do so, the assignee should be authorised to pay the premiums and to charge the amount thereof against the policy and its proceeds. It is also desirable, for the reasons already stated, to insert provisions authorising the sale or surrender of the policy in the same contingency.

In a question with the insuring Company the necessity and the Intimation. form of intimation of the assignation are regulated by the Policies of Assurance Act. In a question with the cedent, no intimation whatever is necessary. Thus in *Fortescue v. Burnett*, 1834 (3 My. & K., 36), a person who had made an absolute assignation of a policy on his own life in favour of certain trustees and delivered the deed, and had thereafter surrendered the policy, was held bound to give security for the value of the policy, though the assignation had never been intimated to the Insurance Company. In questions between third parties, the rule in Scotland is, as already pointed out, that intimation is necessary to complete the right of the assignee. Thus in *Strachan v. M' Dougle*, 1835, 13 S. 945, an arrestment of the contents of a policy used by a creditor of the cedent in the hands of the insuring Company was held preferable to a prior unintimated assignation. Further, the intimation must be in writing, or, at any rate, the notice or acknowledgment thereof must be proved by writing (Bell's Com., II., 17). As has been already pointed out, there are various equivalents to intimation; but all these are also capable of proof by writ.

In England the necessity of notice for completion of an assignment is equally well established (*Dearle v. Hall*, 1830, 3 Russ. 1; *Ward v. Duncombe*, 1893, A.C. 369; *in re Lake*, 1903, 1 K.B. 151); but at common law it is not necessary to prove the notice by writing; it is enough to prove knowledge of the assignment by the debtor in the obligation (*Tibbets v. George*, 1836, 5 Ad. and E. 107; *Gale v. Lewis*, 1846, 9 Q.B. 742; *Lloyd v. Bankes*, 1868, 3 Ch. 488; *cf. Agra Bank*, 1868, 3 Ch. 555).

Questions may also arise as to whether notice has been given to the proper person. Notice should be given to the head office of the insuring Company. Notice to an agent may be sufficient, but only if the agent had implied authority to receive such notice on behalf of the Company (*cf. Agra Bank cit. supra*).

V.—EFFECT OF ASSIGNATION BETWEEN CEDENT AND ASSIGNEE.

Mutual
error, fraud.

I pass now to the decisions as to the effect of an assignation between cedent and assignee. The general rule is that the cedent warrants his title to the policy and the validity of the policy; but not the solvency of the insuring Company. The contract is also subject to the usual condition of good faith applicable to contracts generally. Thus, where the right to an annuity had been assigned and paid for after the annuitant had died, both vendor and purchaser being ignorant of the fact, the contract was held to be void on the ground of mutual error, and the purchaser entitled to recover the purchase money (*Strickland v. Turner*, 1852, 7 Ex. 208). Similarly where a contract for the assignment of a life policy was made by both parties in ignorance of the fact that the assured was dead, the seller was held entitled to have the transaction set aside (*Scott v. Coulson*, 1903, 2 Ch. 249). Where the fact of the death was known to the purchaser, but not to the seller, the seller has in England been found entitled to avoid the contract on the ground of fraud (*Turner v. Harvey*, 1821, Jac. 169; *Brealey v. Collins*, 1 You. 317); and the same rule has been applied in the case of serious illness of the assured (*Jones v. Keene*, 1841, 2 Moo. and Rob. 348).

No intima-
tion
necessary.

No intimation is necessary to bind the cedent and his representatives, but if intimation is not given, a preferable right may be secured by a third party, in which case the right of the first assignee will be limited to a personal action against the cedent.

Breach of
special
obligations
in assigna-
tion.

An action will also lie against the cedent for breach of any obligation specially undertaken in the assignation, such as an obligation to pay the premiums, or to do no act to avoid the policy. In *Dormay v. Borrodaile*, 1847, 10 Beav. 335, it was held that an undertaking to do everything necessary to keep the policy in force was not broken by the cedent's suicide, though the policy was thereby forfeited.

Bonuses.

Bonuses accrued or accruing belong to and form part of the money secured by the policy, and pass with the assignation thereof, unless the instrument otherwise provides (*Marq. of Queensberry's Trs. v. Scott. Union Insurance Coy.*, 1839, 1 D. 1202, 1 Bell's App., 183; *Thomson's Trs. v. Thomson*, 1879, 6 R. 1227; *Sparks v. Burnett*, 1890, 17 R. 997; *Gelly v. Burley*, 1856, 22 Beav. 619).

Whether
assignation

An assignation absolute in its terms may be intended as an

assignment in security only, and "in ascertaining such intention, it is competent to the Court to form its judgment upon the whole of the transaction, and upon evidence *adhors* the deed; such evidence not being used for the purpose of putting a construction upon the deed, but of superadding an equity controlling the estate and interest given by the deed" (per Cottenham, L.C., in *Scottish Union Insurance Coy. v. Marq. of Queensberry's Trs.*, 1842, 1 Bell's App., 183). In the case referred to, the assignee of certain policies, who had granted no back letter, was held liable to account for the surplus proceeds. So in *Shand v. Blaikie*, 1859, 21 D. 878, where a lender on a bond of redeemable annuity granted over entailed lands had effected policies of insurance in his own name on the life of the borrower, it was held that the policies were only effected as a security, and that certain bonuses accrued thereon fell to the executor of the borrower.

Where an assignment is granted expressly in security, there is, as already pointed out, no implied power of sale or surrender; but in a case of necessity application may be made to the Court for that purpose. Thus in *Wood v. Anstruther*, 1842, 4 D. 1363, where a borrower who had conveyed certain policies in security of his obligation on a bond, and bound himself to keep the policies in force, became bankrupt and was unable to fulfil his obligation, the assignee brought an action of declarator that he was entitled to dispose of the policies and to apply the proceeds, *pro tanto*, in payment of premiums advanced by him, and of the sum borrowed, and he obtained a decree to that effect.

In the case of assignments in security questions often arise whether the security is general or limited. One of the most instructive cases on the point arose in connection with a policy which had been expressly assigned in security of a debt of £500. The assignee subsequently advanced a further sum of £300 to the cedent under a bond which bore no reference to the policy. The debtor ultimately died insolvent, and in a question between his trustee in bankruptcy and the assignee, it was held that the title of the latter to the policy was limited to the £500 debt, the Lord Justice Clerk (Inglist) observing, "if the title of possession be unlimited as a title of property, the party is entitled to retain till every debt due by the party demanding delivery of the subject is paid. If his title be limited he can retain only for the payment of that particular debt which is secured by his possession" (*National Bank of Scotland v. Forbes*, 1858, 21 D. 79). The

same rule has been applied in England (*Talbot v. Frere*, 1878, 9 Ch. D. 568 ; *in re Gregson*, 1887, 36 Ch. D. 223).

Whether
right of
retention
for
premiums
advanced.

If the cedent fails to implement an obligation to pay the premiums due on a policy expressly assigned in security, and the assignee pays the premiums without special authority, it is a question of some doubt whether the assignee is entitled to retain the policy in security of these payments. In England it is well settled that the mortgagee of a policy making such payments has a lien on the policy in respect thereof (*Leslie v. Trench*, 1882, 25 Ch. D. 552 ; *Falcke v. Scott. Imp. Insur. Coy.*, 1886, 34 Ch. D. 234 ; *Earl of Winchelsea Policy Trusts*, 1888, 39 Ch. D. 168). But English doctrines of lien afford little guidance in Scots law. The only principle upon which, in the absence of special authority, such payments could be charged upon the proceeds of the policy in Scotland, would appear to be that of recompense, which depends upon the debtor's estate being *lucrata* to the extent of the amount sought to be charged or retained (see *Wilson v. Gordon*, 1874, 1 R. 1093 ; *Brown v. Meek's Trs.*, 1896, 4 S.L.T. 46). But the debtor's estate can scarcely be *lucrata* to the full extent of premiums paid for maintenance of a policy, unless and until the proceeds become payable through the death of the assured, and the bankruptcy of the cedent might render an adjustment necessary before that event occurred.

VI. EFFECT OF ASSIGNATION BETWEEN INSURERS AND ASSIGNEE.

*Assignatus
utilitur jure
auctoris.*

In a question with the insuring Company the legal position of the assignee is expressed in terms of Scots law by the maxim *assignatus utilitur jure auctoris*, and in terms of English law by the rule that the assignee takes the policy subject to all equities to which it was liable in the hands of the assignor (*Mangles v. Dixon*, 1852, 3 H.L.C. 702). In other words, the assignee of a policy is in no better position than the person who effected it and assigned it to him. The rule only applies to questions with the insurers, and does not extend to questions with third parties. This was clearly brought out in *Scottish Widows' Fund v. Buist*, 1876, 3 R. 1076, where an Insurance Company sought to reduce a policy in the hands of an onerous assignee on the ground of fraud, and the assignee founded on the case of *Redfearn v. Somervail* decided by the House of Lords in 1813, 1 Dow, 50. In that case a share in a certain Company which had been assigned for valuable

consideration by Steuart, the ostensible owner, was claimed by Somervail as having been truly partnership property; but the assignee was preferred. In the case of *Buist*, Inglis, L.P., pointed out the essential distinction that in *Redfearn v. Somervail* the question had arisen with a person other than the debtor in the obligation, and that to such a case the rule that an assignee was in no better position than his cedent had no application.

In the case of a policy of Life Insurance the principle above ^{Illustrations.} stated is of special importance, because there are various special exceptions to which such policies are subject. Exception may be taken on the ground that the person effecting the policy had no insurable interest in the life assured, that there was undue concealment or misrepresentation in the declaration which forms the basis of the policy, or that breach has occurred of the conditions regarding notice of change of residence, &c., which apply during the subsistence of the policy; and all these exceptions may be pleaded by the insuring Company against the assignee just as freely as they may be pleaded against the cedent. Thus in the recent case of *Macdonald v. The National Mutual Life Association of Australasia*, 1906, 14 S.L.T. 173, it was held that the insuring Company were not bound because the agreement for the assignation had been made before the policy was issued, and the party truly effecting the policy was the assignee himself, who had no interest. Again, in *The Scottish Equitable Life Assurance Society v. Buist*, 1877, 4 R. 1076, affirmed 5 R. (H. L.) 64, an Insurance Company succeeded in reducing a policy in the hands of an onerous assignee on the ground of false statements made by the assured in applying for the policy, with reference to his habits of life, his health, and his transactions with other Companies. So in *The British Equitable Life Assurance Society v. The Great Western Railway Company*, 1869, 38 L.J. Chancery, 314, where the health of the assured grew worse between the date of his proposal and the acceptance of the risk by the Company, but the aggravation of the illness was not disclosed to the insurers, the latter were held entitled to avoid the policy. In such a case the insurer who has paid the sum assured to the assignee is entitled to recover it, though both have been in ignorance of the fraud (*Leffevre v. Boyle*, 1832, 3 B. and Ad. 877).

An Insurance Company may be barred from pleading such an exception against a *bona fide* assignee. Thus in *The Scottish Equitable Life Assurance Society v. Buist*, cited *supra*, Inglis, ^{Duty to give information}

L.P., said :—"If after the policy has been assigned the Insurance Company became aware of objections to its validity, so clear and conclusive that the mere statement of them is enough, I do not say that there may not then be a duty of communication to those whom the Company know to be interested in the policy. It would not be consistent with good faith that they should, in such circumstances, go on receiving premiums on a policy that they intended to challenge in the end." The same principle would apply *a fortiori* where the objections were known to the Insurance Company at the date when the assignation was intimated. The question as to the duty of an Insurance Company to give information to an assignee was discussed more generally in *Mangles v. Dixon*, 1852, 3 H.L.C. 702, where it was laid down that, as a general rule, the debtor in the obligation is not bound, on receiving a simple notice of assignment, to volunteer information; but if the notice given by the assignee discloses on the face of it that which induces the belief that he has been deceived in accepting the assignment, the debtor in the obligation is bound to inform the assignee of the real circumstances. Even if an intending assignee asks the debtor in the obligation for information as to the existence of prior encumbrances, the latter is not bound to give it (*Low v. Bouverie*, 1891, 3 Ch. 82). It was formerly held that if in such circumstances he did give information he was liable if it was not accurate (*Burrowes v. Locke*, 1805, 10 Vesey 470; *Slim v. Croucher*, 1859, 1 D.F. and J. 518). But it has now been held that he is only bound to give honest answers to the best of his knowledge and belief, and incurs no liability unless his statement either amounts to a warranty or is so expressed as to bar or estop him from denying the truth of what he has stated (*Low v. Bouverie*, cit. *supra*). Notwithstanding the general rule, the possibility of pleas of warranty or estoppel being raised renders it incumbent on Insurance Companies to be careful to give accurate information in answer to inquiries if they give any information at all.

Partial
assigna-
tions.

I have been asked whether an Insurance Company would be bound to accept notice of a partial assignation of a life policy. I see no reason to doubt that they would, though I doubt whether, except in very exceptional circumstances, partial assignations would be practically useful. They would, I presume, take the form of an assignation to the proceeds of the policy, limited to a certain amount. But except in the case of a policy with a high surrender

value, the security of subsequent assignees would entirely depend upon the policy being maintained till it became payable.

Whenever competing claims are made on an Insurance Company ^{Procedure} in respect of a policy, it can, in Scotland, avail itself of the form ^{where} of process known as multiplepointing for throwing the proceeds ^{claims} disputed. into Court, where the competitors can contest their respective claims *inter se*. In England, Insurance Companies against whom doubtful claims were made were formerly bound to test the validity of such claims in a direct action (see *Curtius v. Caledonian Fire and Life Insurance Company*, 1882, 19 Ch. D. 534). But under the Life Assurance Companies (Payment into Court) Act, 1896, 59 Vict., cap. 8, any Insurance Company may now pay into Court any money in respect of which a sufficient discharge cannot be obtained.

There is another matter upon which intending assignees must ^{Right of} be on their guard—the right of retention, which, apart from any ^{retention by} assignment, the insuring Company are entitled to exercise over ^{Insurance} the proceeds of the policy in respect of any advances made by ^{Company.} them to, or debts incurred to them by, the assured. The nature of this right was fully discussed in *Borthwick v. Scottish Widows' Fund*, 1864, 2 M. 595. In that case the assured had taken out three policies of assurance with the Company, two of which he had deposited with the Company under an agreement for a special advance. The assured, who also acted as agent for the Company, became bankrupt, and was then due to the Company, in addition to the special debt, a considerable sum for premiums collected. The trustee in bankruptcy brought an action against the Company, concluding (1) that on payment of the special debt he was entitled to delivery of the two policies deposited; (2) that the Company were not entitled to deal with the policies as surrendered; and (3) that the trustee had absolute right to the policies, free of and claim on the part of the Company for debts due by the assured. The Court granted decree in terms of the first two conclusions, but by a majority of four to three assoilzied the Company from the third conclusion, on the ground that they were entitled to withhold fulfilment of their obligations as obligors in the policies so long as the assured remained their debtor. The preference arising from this right of retention would seem to be subject to the same limitation as that which applies to the right of an ordinary assignee, viz., that advances made subsequent to notice of an assignment to a third party will be postponed to the interest

of such third party. The limitation was applied to the case of a joint-stock company whose articles of association expressly gave it a lien upon its shares for all debts due from the holders thereof (*The Bradford Banking Company v. Briggs*, 1886, 12 App. Cos. 29; *Rearden v. Provincial Bank*, 1896, 1 Ir. Rep. 532). And the implied right of retention of an Insurance Company in respect of its policies could not be pleaded higher.

VII. EFFECT OF ASSIGNATION BETWEEN THIRD PARTIES AND ASSIGNEE.

General
criterion of
preference
is priority
of intima-
tion.

The third parties with whom questions may arise may be competing assignees, creditors of the cedent doing diligence, or the cedent's trustee in bankruptcy. Between competing assignees, as already observed, the general criterion of preference in both countries is priority of intimation, independently of whether the assignations proceed from the owner of the right or his personal representative (*Montefiore v. Guedella*, 1903, 2 Ch. 26), and of whether the assignee was guilty of negligence (*ex parte Cavendish*, 1903, 1 K.B. 151). In Scotland the same criterion applies in questions with creditors of the cedent using diligence, such as arrestment (*Strachan v. M'Dougale*, 1835, 13 S. 954); but in England the holder of an unintimated assignation is preferable to a creditor holding a garnishee order (*Badeley v. The Consolidated Bank*, 1888, 38 Ch. D. 238).

Bankruptcy The rules in the two countries are still more diverse in the case of bankruptcy. The Scotch Bankruptcy Act (19 & 20 Vict., cap. 70, sec. 102) provides that the act and warrant in favour of a trustee in bankruptcy shall vest in him as at the date of the sequestration the whole moveable estate of the bankrupt, to the same effect as if intimation had been made at that date. The Act, no doubt, gives a special protection to payments made by a debtor *bona fide* in ignorance of the sequestration (Section 111); but, subject to this exception, an Insurance Company must not pay to the assignee of a bankrupt under a notice given subsequent to the sequestration. On the other hand, under the English Bankruptcy Act the property of the bankrupt vests in the trustee, subject to all equities existing at the date of the commencement thereof; and an equitable assignee of a policy for value has priority over the trustee though he has given no notice of his assignment (*ex parte Ibbetson*, 1878, 8 Ch. D. 519; *in re Wallis*, 1902, 1 K.B. 719).

The rule that preference depends on priority of intimation is subject to the exception that an assignee cannot found on his notice to the Company as giving him a preference over a prior assignee who has given no notice, if he transacts in the knowledge of, or even if he has reason to suspect the existence of, the prior equitable right. The principle of the exception is well established in England both in the case of sales and mortgages (*Fisher on Mortgages*, 5th Ed., p. 505 *et seq.*), and is illustrated by many cases on assignments of life policies (e.g., *Dearle v. Hall*, 1830, 3 Russ. 1; *Spencer v. Clarke*, 1878, 9 Ch. D. 137; *Newman v. Newman*, 1885, 28 Ch. D. 674). In Scotland the principle is equally well established in the case of absolute dispositions, both of moveables (*Marshall v. Hynd*, 1826, 6 S. 384), and of heritage (*Petrie v. Forsyth*, 1874, 2 R. 214; *Stoddart v. Dalzell*, 1876, 4 R. 436; *Moncrieff v. Lawrie*, 1896, 23 R. 577); and while there is no decision applying to dispositions or assignments in security, there seems to be no good reason for excluding them from the application of the principle, at any rate where both the competing rights are obtained as part of new transactions. On the other hand, it may be doubted whether the principle would be extended to the case of already existing creditors obtaining competing assignments in security. *Vigilantibus non dormientibus jura subveniunt*: and there seems to be no more equitable ground for depriving a creditor of an advantage obtained over another by the completion of a security right, than there would be for depriving him of an advantage obtained by the use of diligence.

While delivery of the policy is not necessary in either country to complete the right of the assignee, it is in all cases expedient to obtain delivery. If this is not done questions may arise with the insurers, who often make it a condition of payment that the policy shall be delivered up, or (in England) with depositors in security, or in either country with law agents, who may establish liens by possession of the document.

VIII. CONFLICT OF LAWS.

The rule that the validity of an assignment executed in a country different from that where the policy is issued and is payable, will be determined by the law of the place where the contract is made, is illustrated by various cases. Thus in *Lee v. Abdy and Others*, 1886, 17 Q.B.D. 309, where a policy granted by an

English Insurance Company in favour of a person domiciled in Cape Colony had been assigned by the assured to his wife in Cape Colony, according to the law of which State the assignation was void, it was held, in a question with the Company, that the law of Cape Colony applied, and that the Company were not liable to pay to the assignee. So in *Scottish Provident Institution v. Cohen & Company*, 1888, 16 R., 112, a domiciled Scotsman obtained a loan in England from a domiciled Englishman, and in security thereof delivered to the latter a policy of insurance over his own life with a Scotch Company. The borrower thereafter died and the lender gave notice to the Insurance Company. The borrower's estates were then sequestrated, and a competition for the proceeds of the policy arose between the trustee in the bankruptcy and the pledgee of the policy. According to the law of Scotland the latter would have had no right, because he held no assignation, but it was decided that as the policy was pledged in England, the rights of the holder fell to be determined according to the law of England, which permits a security to be constituted by pledge, and the pledgee was accordingly preferred. Again in *Scottish Provident Institution v. Robinson and Newett*, 1892, 29 S.L.R., 733, a domiciled Irishman who had a policy from a Scotch Company first pledged it with a creditor in Ireland and then executed an assignation in favour of another creditor. When he took the assignation, the second creditor was aware of the previous deposit. In a competition for the proceeds of the policy in Scotland it was held that Irish law must be applied, and the depository, who would have had no rights according to Scots law, was preferred.

In like manner with regard to the construction of the policy itself, the law applicable is that of the place where the contract is made and is to be performed; and that is usually the domicile of the Company. Thus in *Parken v. Royal Exchange Assurance Coy.*, 1846, 8 D. 365, where a policy had been issued to a Scotchman by an English Company through Edinburgh agents, who had no independent power to conclude contracts, it was held, in an action brought in Scotland, at the instance of an English assignee, that the contract was regulated by the law of England, according to which, differing from the law of Scotland, no interest was due on the sum assured.

ON THE SIGNIFICANCE OF URINARY
ABNORMALITIES, AND PARTICULARLY THE PRESENCE OF AL-
BUMIN AND SUGAR; OTHERWISE
ALBUMINURIA AND GLYCOSURIA,
IN PERSONS APPLYING FOR LIFE
ASSURANCE POLICIES.

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*A Paper read before the Insurance Institute of Yorkshire,
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THE letter handed to me which defined the subject with which my paper was to deal, referred to the intermittence of both albuminuria and glycosuria. The writer wants to know not only the significance of these conditions, but asks, in addition, why they should be present at some times and not at others in the persons of those applying for Life Assurance Policies? He wants to know why they are intermittent. I hope to deal with this interesting question; in fact, I am eager to do so, because, as it happens, it has for a long time presented itself to my own mind when dealing with the predisposing causes of disease in general. I will at the present stage say only this, that its significance arises mainly from the view we take as to the causation of disease, and that the view which I take of disease, and which therefore must colour the opinions put before this Society, is that disease is a conservative process of nature adapted to the preservation of life, and that abnormalities therefore indicate efforts made by nature to restore the body from disease to health.

It was natural, probably, that a layman, in the letter referred to, should speak of albuminuria and glycosuria as kidney affections. But we shall soon be compelled to see that even if we are able to consider albuminuria as indicative of kidney disease, and more or less synonymous with nephritis or inflammation of one or both kidneys, we certainly cannot, if we would understand glycosuria and its significance to life and

health, view it as pointing specially to disease of the kidneys, for I think we shall find ourselves compelled to admit that it is usually significant of something very much more general in the body than that; and further, it will appear that if we are to associate glycosuria with the constant affection of any particular organs, its presence may rather be taken as indicative of some affection of the liver or pancreas and nervous system, than of the renal organs. I think myself, and am rather anxious to press this view on this meeting, that even when we have by common consent to deal with the existence of inflammation of an important organ in the body, as, for example, nephritis or bronchitis or pneumonia, we get a better and a fuller view of it and of its significance if we view it as a local mark of a general condition of body, than if we more narrowly consider it as a local inflammation simply. For it seems to me that we should always keep before us the consideration that had the body been sound and healthy, the local inflammation would not probably have occurred. That, for example, nephritis has occurred and has shown itself by the presence of albuminuria, is a sign that the state of the general health of the applicant coming before us has become impaired. Of course, this kind of consideration will sway us more if we find inflammation of important organs than if it affects less important ones. But as the kidneys are not only important but even vital organs, we must not for a moment fail to let ourselves be affected by this consideration when we find nephritis present.

I shall not be expected to go into questions of pathology as if I were addressing a medical society, but the mere mention of some of the conditions in which albuminuria is found will raise to every mind, I think, the view that in some of its aspects at least it is indicative of general disease, even if we consider it as what it is—a local inflammation of the kidneys also. The view of disease in general which I am putting before you for consideration, while it applies to all diseases (even a common “cold” or the taking of “a chill” coming under the same heading), is particularly applicable to affections discoverable by examination of the urine, because the function of the kidneys is essentially an eliminative one. That is, their office is to separate from the blood the ash or waste left over after the maintenance of the bodily heat has been effected by

oxidation, and the nutrition of the body has been effected by absorption.* If then we find materials in the urine which ought not to be there, the question forces itself on us—How did they get there?

The presence of albumin in the urine may be considered, from an Insurance point of view at least, as suggestive of the existence of disease of the kidneys. As such we must look upon it as grave. There are some forms of albuminuria which are described by some as physiological, as distinguished from those thought to be pathological. I believe that the chief feature which distinguishes these two forms is the longer or shorter duration of the time during which the albuminuria persists. If it is temporary and intermittent, even if recurrent, obviously we shall be able to think less seriously of it than if it is more persistent or entirely persistent—that is, than if it is never absent, or if it is, as the term has it, chronic. But I do not think that in any case can we be justified in refraining from viewing its presence as more or less grave, and requiring anxious consideration from the point of view particularly of the Assurance Company whom for the moment we may represent. If we were acting as the medical adviser of the patient our point of view would be somewhat different, but I am not dealing with that at present; for the present, the question is:—Is this life safely insurable at ordinary rates by the Office who, for the moment, are entrusting its financial interests to our skilled opinion? and if not at ordinary rates, is the life insurable at extra rates? and, if so, at what rates?

Not to attempt to go too technically into the pathological causes of albuminuria, I may yet say that its presence is found in three well-recognised states of the kidney. The first may be called inflammation of the organs—one or both. The tubes only may be affected, or the proper intimate structure of the organ also, its parenchyma. The difference between these two would be exemplified by the differences better known perhaps to laymen as that between bronchitis and pneumonia; and as bronchitis is as a rule less grave than pneumonia, the inflammation of the lung lining membrane less serious than that of

* *Note.*—I allow this expression to stand, because it appears in the paper as I read it; but there is very strong reason to believe that neither the heat of the body nor its mechanical energy comes from oxidation of food at all. Were I writing the passage now, I should say, “the ash or waste eliminated by the body when it has acted as the medium of the transmission of any of the phases of “energy, either, for example, thermo-dynamic or erg-dynamic.”—A.R.

the lung tissue proper, so as a rule is tubal nephritis less serious than interstitial, or than the inflammation of the intimate structure of the organ.

The second form of kidney disease leading to albuminuria is that known as cirrhotic or gouty. The changes here are insidious, and in the beginning of the illnesses that lead on to gouty kidneys may be, and very frequently are, intermittent: that is, a gouty attack of an inflammatory character comes on which may be accompanied by albuminuria. If it is present when the patient happens to be an applicant for Life Assurance, its presence is detected, and report made accordingly. If, on the other hand, the attack has passed off and no albumin is found, he has a much better chance of being accepted. As the first condition of kidney disease, the nephritic form, is accompanied by an enlargement of the organs, so in this, the second form, the characteristic fact is contraction or shrinking. But these collateral facts or accompaniments are again much more important to the applicants' medical adviser than to the Assurance Office examiner. For him (and he will advise his Office accordingly) the main fact is the presence or absence of albumin.

We have, however, at this point come into relation with the very important consideration before referred to, and which must by-and-by occupy us further, that a gouty kidney is one which not only indicates the presence of marks of gout in the kidney, but also suggests or hints to us that gout in the kidney may be accompanied—probably will be in fact if we look for them—by marks of gout in other parts of the body. If we might perhaps have allowed ourselves to consider nephritis as a simple and local inflammation (although for my part I find it difficult to do even that), surely we shall have much more difficulty in permitting ourselves to view the gouty kidney and the albuminuria accompanying it as a limited and local condition; and surely the view that it is not so much the kidney as the man that is out of order, must force itself with greater power on our attention. This kind of consideration acquires even greater vigour when we come to consider the third condition of kidney which is associated with albuminuria.

This is the waxy or lardaceous, or as it is sometimes but very badly called the amyloid form of renal disease. In this condition there is deposited in the kidney (from the blood of

course) a peculiar substance which is different from all the normal components of the body—the lardaceous substance. Now the two great causes which lead to the deposition of this substance are long-continued suppuration and syphilis. This is the general view; but it is of course possible for us to take another view, and to say lardaceous disease and long-continued suppuration are not so much effect and cause of one another as they are, perhaps, concomitant or successive effects of a common cause, viz.: the state of the blood of the person exhibiting them. Lardaceous disease may, in fact, be rather an effect of that state of the blood which made long-continued suppuration necessary, than the effect of the long-continued suppuration itself. This, I must say, is rather the view I am myself inclined to take. I do not, of course, question the connection between the two, but the causation may not be quite the one commonly described. No one, for example, believes, although day always follows night and night day, that day is the cause of night or night the cause of day, because we know that the succession of day on night and of night on day is caused by the rotation of the earth on its axis and its relations to the sun. They are successive effects of common causes; and so lardaceous disease and long-continued suppuration may be concomitant or successive effects of a common cause, viz.: the state of the blood.

But, whatever view we take as to this, surely everyone must be struck by the fact that both long-continued suppuration and syphilis are marks of general rather than of local affection of the body, so that the view I am pressing on you in order to show the gravity of the presence of albuminuria becomes strongly reinforced. A great authority has, in fact, said of the presence of lardaceous disease, that it commonly occurs together with changes of the same nature elsewhere (Allbutt's *System of Med.*, vol. iv., p. 353). What could be more strikingly illustrative of the essentially general character of, at any rate, the lardaceous form of kidney disease than this statement? And how strongly is the view confirmed, therefore, that, when we find albuminuria present, we are bound to view it as a grave condition from an Insurance point of view. It is no doubt true that the total mortality, as recorded by the Registrar-General, from diseases of the urinary tract such as might have manifested themselves in albuminuria is not a

large percentage of the whole. From $2\frac{1}{2}$ to 3 seems to be about the percentage. In 1903 there occurred some 514,628 deaths in England and Wales from all causes, and of these only some 15,704 were attributed to such diseases as might have shown themselves by the presence of albuminuria. This works out to about 3 per cent. of the whole; but, lest we should feel disposed to put this aside as trifling, let me draw your attention to the following considerations.

By far the largest proportion of Insurance business is done in lives over twenty years of age. But in the case of the whole population, about 40 per cent. of the mortality occurs under twenty years of age. For instance, in 1903, out of the 514,628 deaths from all causes, 112,799 male and 96,663 female deaths, or 209,462 in all, occurred under twenty years of age. This works out to very close on 40 per cent., leaving 60 per cent., or 305,166 deaths of persons above twenty years of age, among whom practically the whole of the albuminuric mortality occurs. This is no longer 3 per cent., but 5 per cent., a much increased proportion, so that the deaths from diseases which might show themselves by the presence of albuminuria assume a considerably enhanced importance.

There is a form of albuminuria known as the albuminuria of adolescents, on which some attention has been bestowed of late years. It seems to go and come, and to be comparatively easily got rid of. A large percentage of boys from thirteen to sixteen years of age seem to have it. Notwithstanding the favourable view taken of it by some, I am glad to think that few cases of this kind are likely to come before our Offices for consideration, for I should find it difficult to recommend the acceptance of such lives at ordinary rates. However, very little Insurance business is done at these ages.

This brings us on to a cognate subject of which I wish to say a few words—the subject of physiological albuminuria, as it has been called, as distinguished from pathological. I am sceptical as to this division, my view being that when albumin is passing through the kidney either from an excess of food or from the body substance itself, the condition of health is not so good as if it were not passing. Of course, all forms are not equally or to the same extent grave. Some forms are graver than others, while some are scarcely grave at all. But I think we must admit that even the small amounts of it, if they exist

at all, have grave potentialities, since they may go on to larger and larger amounts, as the slight pathological conditions which lead to them become greater and greater with the lapse of time. Some examiners, I may say, have a way of finding "faint traces" of albumin not discovered by others who are considered competent. We are hardly justified in refusing such cases, because, among other reasons, most other Companies would accept the lives as ordinary ones. And this, it has often seemed to me in considering the value or otherwise of lives, is a pertinent question as well as a plain common-sense one. What would the average Assurance Office say of this life? And if the answer is that the average Assurance Office would accept the life, we should not be so hypercritical as to refuse it. Not infrequently have I been helped to a decision by attempting to answer this question to myself. There is hardly any life which cannot be blown upon if we are in a hypercritical spirit.

But the interpolation I made a few sentences ago—"if they exist at all"—induces me to go on to say that, between physiology or health-functioning and pathology or disease-functioning, there is hardly any dividing line, or at least none which it is easy to define, for physiology and pathology, or let us say health and disease, shade off into one another by gradations so insensible that it is very difficult to say where the one leaves off and where the other begins. Typical states of the one sort can no doubt be easily demarcated from typical states of the other, but the gradual and finer and subtler differences cannot. Nature is not made in separate and water-tight compartments; certainly she is not made in aether-tight or energy-tight compartments, each demarcated from the other by well-marked boundaries. But, like animal and vegetable, or vegetable and mineral, and organic and inorganic, and day and night, and light and darkness, and heat and cold, and motion and rest, there is one continual heave and throb, and change and interchange going on among all the innumerable parts of her harmonious whole, which makes us feel that our divisions of her parts must be adapted to her arrangements and order, and not her arrangements and order to our divisions. As it is impossible, then, to say at what exact point health ceases and disease begins, and as those "faint traces" of albumin would not be discovered or notified by the ordinary

examiner, I think we may as a rule refuse to allow them to compel us to reject the life. Still, with this exception, the real meaning of which is that practically there is no albuminuria in these cases at all, I cannot help saying that in all cases in which albumin is found, even if it should also appear that it is present at some times of the day and not at others, it appears to me that we ought to attach importance to it, and postpone the application if we do not reject it. For, as in the case of so many other diseases, nephritis, or inflammation of the kidneys, may appear as an intermittent condition, with periods of complete recovery between the attacks, before it settles down, after a period in which its attacks become separated by shorter and shorter intervals, into the chronic form in which the nephritis and its albuminuria are never absent. And I do not think that we can say that kidneys which show temporary albuminuria are functionally competent, or that we can be sure that they will long remain in their present state. Before a Medical Society, we should have to lay stress on the pulse-tension, the heart's beat, and other conditions not particularly interesting to Assurance men, before we could gauge the true significance of intermittent albuminuria; but no doubt each medical examiner would go into these questions and report accordingly. But I think it will be apparent even to a layman, if he allows himself to think at all, that the compulsion felt by the medical adviser, on finding albuminuria present, to examine the pulse-tension and the state of the heart, implies what I am so anxious to maintain—that albuminuria is a general affection rather than a merely local one. But, if further evidence is required, the most sceptical may well be contented by a reference to defects of vision, to bleeding from the nose, to apoplexy, to ulceration of the bowel, and even to other diseased conditions which are caused by albuminuria, or if not caused by it are probably to be accounted for as effects of the same causes as produced it. Many particular forms of inflammation in other parts of the body also accompany albuminuria.

I do not here go into the methods adopted for examining the urine in Life Assurance, because these appear to be rather chemical and medical than actuarial; but I may make one or two general remarks. First, the specific gravity of the urine is important. In fact, many Companies have a question like

this:—"If the specific gravity is below 1012-1015 or above 1025-1028, please give an opinion as to the probable reasons for this." And this is, I think, a soundly-framed question, for if the specific gravity is, say, 1008, we at once become suspicious that some materials which ought to be getting away by the kidneys are being retained in the blood, and if albuminuria were found in such a urine in addition, we should be compelled to look on the case no longer as grave, but as very grave. Without albumin, however, so low a specific gravity might only mean a somewhat sudden rush of dilute fluid from the blood, caused by a drink of water or tea or beer taken not long before the examination. Properly speaking, an examination of the urine would be much more satisfactory if the applicant could be asked to collect the water for twenty-four hours, and let us have a sample from the mixed quantity; but I do not suppose this will ever be done for Assurance purposes; applicants would not be willing to take the trouble, although it is often done and properly asked for when patients are getting medical advice. It might, however, be done in the exceptional case in which a low specific gravity and albumin occurred, after the matter had been explained to the applicant, although I fear it would make little difference except as to the amount of extra which we should suggest as necessary to be added to the life in the very improbable event of our being willing to recommend the risk at all. For the reasons I have given, we must look upon the presence of albumin as grave.

Second: Ought casts to be looked for? What is their significance? It is not customary to make a microscopic examination of urine for Life Assurance purposes, unless some special reason like the discovery of albumin should suggest it. The presence of casts would be indicative, in any case, of a serious condition of affairs, but if they were found after the discovery of albumin I fear their presence would compel rejection of the life, or at the very least postponement of the application. The tissue of the kidney breaking down, which the presence of casts must mean, would render it impossible to recommend the acceptance of such a life on any terms. I remember one such case where a man of thirty-eight said he had "only a cold on the kidneys" ("chills on the liver" and "chills on the lungs" are well-known popular forms of illness),

and was very angry at what he thought my unreasonableness in refusing to recommend him on any terms. He died, however, within two years of the application—not that so rapid a termination by any means always occurs, but I refer to the case as showing how grave such conditions often are. On the whole, I think the heading introduced by some Companies—“results of examination under the microscope, *if thought desirable*”—is a very reasonable one. The matter is then left to the discretion of the medical adviser, and would probably be rather followed for the examination of deposits like phosphates or oxalates, urates, or uric acid than albumin, since the presence of the last would compel its own conclusion.

GLYCOSURIA.

The disease which shows itself by the presence of sugar in the urine is Diabetes Mellitus. Now, Diabetes Mellitus is a general affection; that is, it is an affection involving many parts of the body. We are obliged to take this view, whatever opinion we hold as to albuminuria or the nephritis or inflammation of the kidneys, on which, for practical purposes, we may consider albuminuria to depend. I have put before you the view which seems to me most consonant with nature and facts, that most local inflammations can be best understood by considering them as the local manifestations or expressions of general states of the body; and in the case of organs so important as the kidney, this view would be more tenable and also more instructive than in the case of organs less important in size or in function. The body is one organic nexus of parts, and no one part can suffer without the whole suffering along with it. This principle is, I think, far more important and far-reaching than is commonly believed. But whatever view we may take as to inflammation in general, or as to the disturbances in the body associated with inflammation or affection of any particular part, we are bound to look upon Diabetes or permanent glycosuria as a general rather than a local condition; and this for two reasons. First, we cannot associate the presence of permanent glycosuria with the constant affection of any particular organ. There is a popular

idea, since Diabetes is shown by the presence of sugar in the urine, that it is a disease of the kidneys. Now, inasmuch as changes in these organs "are always present" in the bodies of persons who have died from Diabetes, we are unable to say that Diabetes is not an affection of the kidneys. But we *can* say that there are other organs, particularly the liver, the pancreas, and the nervous system, cerebral, spinal, and sympathetic, in which pathological changes are more characteristically met with than in the kidneys. This is the second reason for holding that Diabetes is a general rather than a local or special affection. I may remark that the definition for medical scientific purposes of Diabetes is that "it is a constitutional disease characterised by the persistent passage of glucose or grape sugar in the urine." Now if this is a true definition we are scarcely considering it. We are not concerned with the medical view of the subject. What we want to know is: What is the meaning of the presence, temporary or permanent, of glucose in the urine of a person applying to us for life assurance, and what difference ought it to make in the terms we can offer him? Or, can we accept him at all? If the glucose is permanently present, evidently the condition is much graver than if it came and went. So that if the case showed permanent glycosuria, that is, the invariable presence of glucose on several examinations, and if it coincided with the medical definition of Diabetes, I suppose we should refuse it. For in hardly any circumstances would an Insurance Company accept a permanently diabetic life, even if the usual accompaniments of thirst, unnatural hunger, anorexia, and wasting were absent. At least in such a case the rating would have to be high. I may remark, however, that while it may be suitable to medical scientific purposes to define Diabetes Mellitus as a permanent glycosuria, this does not exclude the possibility that at a stage previous to that at which the medical adviser saw it, the case may have been one of intermittent glycosuria. As a fact, most conditions of disease are recurrent or intermittent before they become persistent or chronic, and as a further fact, treatment is of far more efficacy in the intermittent than in the chronic condition. The term chronic, however, does not mean incurable, but only long continued. Any condition lasting for, say, three months or longer may be termed "chronic." This is my suggestion

at least as to the meaning in which the term should be used. Further, I think that most of the diabetic conditions, except the very acute cases in the young, begin in intermittent or recurring states before they become chronic; and, further still, even after they have become chronic and persistent, they are not equally so at all times, but show at some times larger and at other times smaller amounts of glucose to be present. To define Diabetes, therefore, as a permanent glycosuria seems to me a little like a resuscitation of the old distinction of the schoolmen between the nominal and the real, as if the name was the important thing rather than the thing or condition; and I say this because men who do this are apt to speak of "a true diabetes" as if a diabetes was a sort of metaphysical entity to which the given case more or less approximates, whereas if there is an entity at all, health it seems to me is that entity, while disease is a departure therefrom.

I have named abnormalities of the liver, of the pancreas, and of the nervous system, cerebral, spinal, or sympathetic, in the order of their most frequent occurrence, or, I was going to say, in what is believed to be such order. But I really do not know if I am correct in placing them in this order, for it is quite a moot point whether disorders of the liver or of the pancreas are the chief factor in the disease. But now, just to show how profoundly morbid an affection the diabetic condition is, look at this list of organs found to be disordered in persons who have died of this disease. I have mentioned the liver, the pancreas, the kidneys, and the nervous system. Parts of the last system found to be affected are the brain itself, the upper parts of the spinal cord, where brain and cord become physically differentiated from one another; and I may add that the lower portions of the spinal cord, and not infrequently the central canal and perivascular spaces, are enlarged and affected, and the posterior columns atrophied and wasted. These changes no doubt point to profound alterations in the general nutrition of the body, where indeed I suggest the changes mostly begin and continue. Glycogen, the same substance found in the liver, is also found in large quantities in the spinal membranes and in the sheaths of the vessels. Then the cerebro-spinal nerves may be affected, and about the peripheral nerves there may be great increase of connective tissue with secondary destruction of the axis cylinders or intimate

structure of the nerves themselves, that is not only a perineuritis, but also even a destructive neuritis. Then, further, the sympathetic nerves and their ganglia are found often to be affected, the ganglia enlarged, hardened, and their proper function connected with the origination of nervous impulses destroyed, and the nerves in connection with them atrophied and hardened. The heart muscle is also often affected. The blood itself is fatty, the red corpuscles broken down and reduced in number. The blood contains more sugar than it should do, and contains, besides, an abnormal amount of acid. The lungs are diseased, sometimes extensively so. The stomach, the intestines, and even the bladder are affected, all of them showing hæmorrhages not infrequently. The skin in Diabetes is often dry and rough; but other derangements are often seen, as feebleness of the skin-circulation, and blueness of ears, nose, and cheeks, and coldness of the legs and feet. Itchings at various points are often present, besides what may be called to a lay audience skin dropsy. In the region of special sense, blunting of the senses of smell and taste has been observed. Inflammation of the ears, resulting in deafness, more or less pronounced, has also been observed. Numerous disorders of the eye also are common. Inflammation of the central point of the retina, and hæmorrhage into the retina are described as of frequent occurrence, as also, of course, various degrees of blindness from slight impairment of vision to complete loss of sight. Inflammation of the valves of the heart occurs, and faintness and heart failure in consequence are not uncommon. Indigestion and rheumatism also occur. After all these signs and symptoms of disease have been detailed, still other and further symptoms and signs may be noticed, so that the general as distinguished from the local character of Diabetes Mellitus is very forcibly pushed on our attention, and the gravity of attempting to insure a life diseased in almost every part of the body is proportionately recognised.

Now, there are two views which we may take of these changes. We may consider them all as due to the existence of Diabetes, or we may consider these changes and abnormalities, as also the Diabetes itself, as marks of the general and profound malnutrition which has been occurring in the body for a very long time past. The latter appears to me to be by far the

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best, as it is the most comprehensive view, and it is therefore the one which I put before you for consideration. I think the diabetic condition is caused mainly by what goes into the body. But whichever view you take, I think you will agree that Diabetes is a grave affection, and one which should render Insurance Companies very chary of accepting lives affected by it. Either the extra demanded ought to be very large, or an Endowment Policy offered to terminate at a certain age, 50 or 55, with a considerable addition to the life risk, each case being considered on its merits. The acute cases, as they are called, are almost invariably—yes, and speedily—fatal. They are analogous to what is popularly called galloping consumption, and are absolutely uninsurable. The slower cases which characterise middle life may perhaps be considered, and our view on this point will be determined by general considerations as to whether, for instance, much impairment of the general health is concomitantly present. The combination of glycosuria and albuminuria must compel absolute rejection. Happily, Diabetes is not an important cause of death. In 1903, out of the 514,628 deaths occurring in England and Wales, only 2,844 were attributed to Diabetes, and they were distributed pretty equally between men and women. This works out to about 5 per cent. of the deaths, or, say, 50 per 1,000 deaths. They are said in text-books to amount to about 5 deaths in each 100,000 of the population living.

As to the increase of rating which ought to be suggested in those cases where we think the cases are worthy of being entertained at all, we should recollect that death from chronic diseases begins early in the fifties and goes on at an accelerating rate from that period of life. A very good plan in these cases therefore seems to be to assume that death will be likely to occur at from fifty to fifty-five years of age, and to offer an Endowment Policy to mature, say, at the earlier of these dates, with a stiff addition to the life risk. A stipulation might perhaps be introduced to the effect that if the applicant survived the period for which the life was accepted, better terms might be offered him; but perhaps the bonus additions, if there be profits on his Policy, is all that he is fairly entitled to in this event. You will know much better how to deal with this question than I do. Offices have become much more considerate of late years, it seems to me, of the interests of

their clients than was the case a generation or two ago, and in the larger sense appear to consider the best interests of their clients the best interests of the Offices also.

ON THE INTERMITTENCE OF ATTACKS OF DISEASE.

I come now to deal with what is to my mind not the least interesting part of my subject. Why, I am asked, do both albuminuria and glycosuria intermit? How is it that in an applicant for Assurance they are present at some times and not at others—so that it may so chance that one medical examiner, finding no traces of either, recommends a life for acceptance at ordinary rates, while the next, finding albuminuria or glycosuria present, cannot recommend the risk? Well, this seems at first sight perhaps and to the uninitiated a puzzling question, but the solution is really easy. It is connected, as I have said, with the very important question of the causation of disease in the body; and in saying this I have in mind rather the predisposing than the exciting causes of disease, although indeed both are involved. We may see, however, even without much attention to causes, how a person exposed to the exciting causes of cold, fatigue, heat, wind, wet, &c. might, if predisposed to any affection, get an attack of that affection from any of these causes. In fact, this is quite a matter of common opinion, and just opinion too, as it happens, although the ordinary person or man in the street has very rarely indeed attempted to think out for himself what predisposition means. When he thinks of it at all, he is apt to imagine that predisposition is one of those mysterious conditions which puzzle even the keenest intellects, and which for his part the ordinary man very soon learns to let alone, imagining perhaps that it is a condition on which there are almost as many opinions as there are inquirers. I think, however, we can without much difficulty get our ideas somewhat cleared on this subject. In speaking of disease, we think of it as some departure from health, and this is, I think, the best idea we can form of it. If we ask, however, what health is, we shall find that it is not very easy to say. We should have to describe rather than define it, and our description would have to be longer and to

deal with more points than we imagined when we set out in, perhaps, a rather foolhardy way, to define or to describe health. Now I am not going to trouble you—because it would lead us too far—with the factors that go to even a reasonably short description of health, with the rate and character of the pulse and respiration, with the facility of perception and of cerebration, and with the actions and characters of actions of the various organs and viscera, secretory and excretory, which go to the formation of the human or the animal body. For indeed we may take a short and simple view of disease by saying that the form of departure from health which it usually takes is that it is due to the accumulation in the body of waste unused and more or less effete materials, and the efforts of nature to get rid of the same. Disease is therefore essentially a conservative process of nature adapted to the preservation of life and the restoration of health, by the burning up and casting out of the body of those offending materials of whose presence in it she has become more or less violently intolerant. The processes she adopts to these ends are known as fevers and inflammations. The most noticeable condition in these diseases is elevation of function, quickening of the pulse and respiration, and raising of the body heat—the feverish state, in short. Sometimes the accumulations in question exert their primary effect in depressing, and then we have the noticeable effect of subnormal temperature and depression of function generally. The former states of body take form in what are called the acute diseases, the latter in the chronic, which have from time to time acute or sub-acute or mild exacerbations. The body may be said to be more or less violently intolerant of offending materials in the former, and more or less tolerant of them in the latter, although from time to time tolerance ceases and the exacerbations referred to take place. Now, predisposition appears to me to be neither more nor less than inverse resistance to the causes of disease. We all come into the world with various and differing degrees of it, but starting from our initial point, whatever it is, we at once begin to make our own predisposition by the ways in which in helpless infancy our parents or guardians treat us, and then when we take the management of affairs into our own hands, by the ways in which we manage ourselves. The chief agencies which modify predisposition are the relations of the body to air, to food and

drink, to exercises, and perhaps to these may be added anxiety ; but the modes in which waste, effete, and deleterious matters accumulate in the body are through breathing bad and vitiated air, through too great restriction of its supplies, through wrong alimentation and drinking, the absence of exercises, and perhaps the perversion even up to putridity of function by too much anxiety. Now, when these causes have acted for some time, a process is apt to be set up in the body by which these accumulations, slowly or rapidly collecting by these means, are burned up, and during this process if, for example, inflammation of the kidneys is set up, we may find albuminuria, which in turn disappears after the process has exhausted itself and recovery has taken place. The question or feature of intermittency then is accounted for. The condition is present when nature has been compelled to set up a nephritis to burn up the offending material, and it disappears when that process has been effectual. But if the same mode of living is resorted to after recovery as was followed before, the illness will very likely be set up again, and perhaps after recovery has once more taken place, the old causes coming again into action, another attack is again necessary ; and this time, or, perhaps, on some other occasion, recovery is no longer complete, and a permanent state of ill-health sets in. Permanent, I say, or at least so permanent that it may require a very long time indeed before a cure can be effected. The question then of the intermittence of albuminuria or glycosuria really resolves itself into the more general question :—Why are chronic or long illnesses preceded usually by successive attacks of acute, sharp, and usually short illnesses before the chronic set in ? Now the answer to this question seems to me to be very interesting. It is because the causes leading to them are either constant or are acting all the time at intervals so short as to be practically constant. And the law of the economy speedily formulates itself thus : *Constant causes acting on the human or animal economy show themselves not in constant effects as you might have supposed that they would, but in intermittent or periodic effects.*

Or, we may say, since causes are perhaps not quite constant, causes acting on the human or animal economy at short intervals of time manifest themselves by effects appearing periodically or intermittently at longer intervals of time.

The causes are constant or almost constant; the effects periodic or intermittent. I have in view, of course, the predisposing causes of disease rather than the exciting—for the wind, the fatigue, the cold, the rain, the exposure act noticeably at intervals, and not constantly. But as to the law to which I draw your attention, I do not know, gentlemen, if it is not the most important practical law of causation in medicine. And yet, I think it is almost universally overlooked, or where not overlooked, misinterpreted.

Of course, the scope and action of the law is not confined to the incidence and the facts of fevers and inflammations. It is more or less universal. Take some of the lower applications of it. If a child swallows a halfpenny which partially, but not wholly, occludes the rima glottidis, does that child cough and cough and cough until either it expels the halfpenny, or until his mother removes it, or until he dies? Nothing of the kind. The child has a bout or an attack of coughing, but after that has lasted some time, a period of quiet sets in. But the halfpenny remains. And succeeding attacks of coughing with periods of quiescence sometimes quite complete occur in alternation, the halfpenny remaining all the time. The system is now or at one time tolerant, and then or at another time intolerant, of a constant irritation. Or a man has a stone in the kidney or even the bladder. Does he suffer from constant dysuria, backache, hæmaturia, strangury, till either he dies or gets the stone away? Nothing of the kind! He suffers from such attacks, no doubt, but these are followed by periods of quiescence, the system being at one time tolerant and at another intolerant of a constant irritation. And so with the incidence of other diseases. Medical men are well acquainted with the fact that usually successive separate attacks of bronchitis occur in the life history of patients before they suffer from chronic or long-continued bronchitis. But even the laity speak of the fact that "So-and-so has his winter cough again." Of course the phrase implies a theory that the cold, raw, wet, or frosty weather of winter is the cause of the cough; but they may not be correct in this theory; and indeed I do not think as a rule they are correct. The exciting causes, of course, cannot be avoided so long as the man lives in a cold, raw, and changeable climate. But it is much more than doubtful whether he would have had his "winter cough" at

all if during the summer he had lived in such a way as to get rid of the predisposing causes, that is to say, if he had attended properly to his relations to air, food, drink, and exercises. The condition of body set up by his improper relations to these factors is constant, but the effect—the “cough”—comes on only in winter; at least at first this may be so, for the man who suffers from a “winter cough” begins, after a few years, to have a “spring” and “autumn” one also. Indeed it is not very uncommon for him to have one or two in summer as well. But this illustration brings out the point to which I wish to draw attention, viz.:—That the constant existence of the predisposing condition manifests itself first in a series of separate attacks of bronchitis followed by long intervals between them, but as the predisposition persists, the intervals between the attacks become shorter and shorter, and if the predisposition persists still further, the time arrives when the patient is never free from cough at all; although even then he is not always equally ill, but is worse with his chronic ailment at some times than he is at others. You may mentally locate the factors that go to make predisposition where you like. Predisposition is, as I have said, inverse resistance to the causes of disease, whatever they are. You might call it weakness, but whatever you call it, it is more or less constant, and yet the patient is not constantly but only periodically or intermittently ill, at least at first and for a considerable time. This is the reason why attacks of albuminuria and glycosuria are often in their commencement intermittent, and this is why, I may say, I demurred a little to the definition of Diabetes as a *persistent* glycosuria, because no medical adviser could recommend a life showing such a condition, although he might think that one showing an intermittent state of glycosuria might be considered on terms. I am not now, of course, considering the medical aspects of predisposition on the incidence of either intermittent or chronic disease, but if we think predisposition is an effect of the habits of life, and if by improving these habits we think the incidence of disease can be ameliorated or even prevented, it is evident that we have come to a much more hopeful state of mind as regards the management both of intermittent and chronic disease, than if we viewed predisposition, as so many seem to do, as a great dark mysterious entity which no one can modify and no one

can understand. At any rate, as the body slowly accumulates through wrong predisposition, effete materials within it, attacks of disease arise or are set up by nature to get rid of the offending materials. These are the original separate attacks of albuminuria, glycosuria, or whatever disease it may be which afflicts the patient; but as further accumulation goes on through the continuation of the habits of life, the attacks become separated by shorter and shorter intervals, till by and by there are no intervals at all, and the patient is always ill. In the former case he might possibly be insurable on terms; but in the latter not at all. And as to the presence both of albumin and glucose in the renal excretion, this appears to me to have a special significance in view of that depurative function of the kidneys of which I spoke in the earlier part of my paper, since it is the office of these organs to separate from the blood the ash or waste left over after the nutriment introduced through the digestion has been supplied to the body. It is true that the kidneys separate rather waste from nitrogenous food (urea and uric acid) than carbonaceous stuff like glycogen and grape sugar, and we can the more readily see, therefore, when they take to separating the latter, how profound and general must be the changes in the body which so eventuate.

Now, if you are not tired of the intermittence as distinguished from the continuousness of the processes of disease in the body, I should like to say a word or two as to its remoter causes. For the truth is that health also shows this intermittent character, although in a lesser degree than disease. And not only is this so, but even inorganic phenomena also seem to follow the same law. The tides, for example, do not rise continuously till they reach their highest point, neither do they fall continuously till they reach their lowest. But when the tide is flowing it flows and ebbs, but keeps flowing, as a man climbing a mountain rises, say, 10 inches each step but falls back 2 or 3, rising and falling all the time, but on the whole keeping on the rise. And in health we are not always at the same level, but within narrow limits the pulse rate, the respiratory rate and volume, and the temperature, are always varying a little. Now, can we offer any reason for this constant succession of changes? Well, I think we can! Owing to the conditions and relations of our earth to the sun,

which is the physical source of its heat and life-sustaining power, it projects now one side and then, after an interval of twelve hours or so, another to the sun. The effect of this is that during the daytime every living thing is shrunk and ready for action, while during the night every living thing is tired and swollen and ready for sleep. There is consequently an alternation of shrinking and swelling in the life of everything on our planet; and so far-reaching is this condition that even the ultimate element of protoplasm under the microscope is always drawing in its substance (shrinking) or pushing it out (swelling), and the alternation between shrinking and swelling, and swelling and shrinking goes on so long as life lasts. Observe that this contraction and dilatation, this shrinking and swelling, occur long before muscular elements are introduced into the structure of the living thing. It seems then to me that this physical intermittence of action is caused remotely by the rotation of our earth on its axis, and the manner of its rotation and behaviour to the sun. And this seems to be the cause why all the phenomena of life are naturally represented diagrammatically by an up and down zig-zag representation such as we are accustomed to see in readings of pulse rate, temperature, respiration, quantities of bodily fluids secreted and excreted, and so on. Nay, even the results of our commerce and the accumulations or dispersions of our wealth can be, and in fact are, represented in a similar manner, not to hint at our politics and other social phenomena. And I think this view is corroborated rather than otherwise by the speculative consideration of what might happen if the behaviour of our earth to the sun were different from what it is; if, for instance, it kept always one side towards it as the moon does to us, rotating once on its axis for once in its orbit, so that on one side there should be everlasting day on the earth, and everlasting night on the other. For then, it seems to me, the diagrammatic representation would not take the form of a zig-zag up and down movement, but would rather be represented by a point swelling out in a uniform way into a line, and then into a band widening and widening till it reached its broadest width, after which it would narrow and narrow in a correspondingly uniform way until it ended in a point like that in which it began to be. But, as I daresay I shall be told that I have carried the discussion as to the causes of the inter-

mittence of disease far beyond the limits when they have any practical importance, I shall pursue it no further, tempting although a further discussion might be. But I think I have practically accounted for the facts of the intermittence of disease, and have shown you that when you find such intermittence present, you ought to look for a constant cause, because constant causes acting on the body show themselves not in constant but in periodic or intermittent effects.

INDUSTRIAL ASSURANCE.

By JOSEPH BURN, F.L.A.

*A Paper read before the Insurance Institute of Bristol,
25th January, 1907.*

THERE is no truer saying than "A friend in need is a friend indeed," and there are hundreds of thousands of people to-day who could tell you that their greatest time of need was when death suddenly snatched away one of their nearest and dearest; and, moreover, they would also tell you that at that trying time their insurance policy was a friend indeed. We all learn best by experience, and the industrial classes generally learn little except by experience; hence it follows that in the early days of Industrial Insurance the undoubted benefits which it conferred were not readily recognised, but as the experience accumulated of claims promptly met at most trying times, the lesson of insurance was learned by millions, and it is only the most obstinately ignorant who will at the present time venture to argue that insurance is not a blessing which should never be neglected. Over thirty years ago the following paragraph appeared in the *Insurance Times*:—"Who need life insurance most? The poor or the rich? The families who are entirely dependent upon the daily or weekly earnings of their head or those who have other sources of maintenance? Life Insurance is good for the rich and the well-to-do, but it should be looked upon as indispensable for the poor. The complaint is general, however, that Life Insurance fails to reach those who most need it, and upon whom it is calculated to confer the greatest benefit. The family that ought to be protected by Life Insurance is seldom or never sheltered by a life policy."

Undoubtedly it is the poorer classes who benefit most by insurance, and the Industrial form of insurance is so exactly suited to their requirements that we must all feel proud in assisting to promote a benefit of such national importance. Ordinary Life Assurance was well known and appreciated for very many years before Industrial Insurance was ever heard

of. It was not that the poorer people did not to a very great extent recognise the desirability of providing for exceptional expense which was at any time likely to be incurred owing to illness and death of some member of the family, but their experience during the first half of last century should have taught them, and in many cases undoubtedly did teach them, to beware of those who represented that they could help them in the matter. Friendly Societies and Burial Clubs (or Dead Briefs, as they were sometimes called) existed in plenty, but they were mismanaged in the most extraordinary manner, and almost invariably came to a bad end, so that those who contributed for the longest time eventually lost all they had paid in, and necessarily became the most bitter opponents of all such systems, and were for years after the means of persuading others to have nothing to do with them. Uniform premiums for all ages at entry were most usual, and consequently it generally happened that as members grew old, younger men did not care to join, and bankruptcy often resulted. There was, of course, no such thing as an actuarial valuation, for even had such been thought necessary there was no actuarial knowledge available for the purpose. Occasionally a Society did happen to accumulate what they imagined to be a large fund, whereupon benefits were increased or premiums decreased, and often a feast to all the members was provided to celebrate what they imagined to be an epoch-marking event, but which was soon afterwards remembered by the unfortunate contributors as the beginning of their rapid downfall.

After many years of the most dismal failures such as those I have referred to, it is not surprising that most men who had any knowledge of the principles of insurance regarded the possibility of providing it in a form suitable for the working classes as quite impracticable. It is, I think, still more remarkable that any Company which did honestly attempt to build up a system of Industrial Assurance on sound business and actuarial principles should succeed in the face of the well-earned popular discredit of everything of the kind. One cannot but admire the courageous perseverance and wonderful business ability which at length enabled the pioneers of Industrial Assurance to succeed not only in establishing a sound system, but in building up one of the most marvellous institutions which the world has ever seen, and to which we

in these latter days are proud to own allegiance. The history of Industrial Assurance is so largely the history of the Prudential Assurance Company that I must be pardoned if I appear to make somewhat frequent reference not only to its past history, but also to its present methods, which are to a very large extent followed by its younger and smaller contemporaries. The "Prudential" was not the first Company to transact industrial business, but of the two Companies which preceded it one has long since ceased to exist, and the other has been absorbed, so that it is quite correct to refer to it as the oldest Industrial Company; and, moreover, no one can reasonably doubt that this will be equally true when repeated by our grandchildren and their great-grandchildren.

The first Industrial Assurance Company was founded in 1849 under the title of "The Industrial and General," and an offshoot of this, "The British Industry Life Assurance Company," was founded in 1852, and was transferred to the "Prudential" in 1859. The Prudential Assurance Company was founded in 1848, under the title of "The Industrial Mutual Assurance, Investment, and Loan Association," but did not commence to transact Industrial business until the year 1854. Great difficulty was experienced in the formation of Tables of Rates for Insurance which should be safe and at the same time not such as to be likely to require any material changes in future. The Government Actuary of the time had certified the following table, which was closely followed by nearly every Club and Society in existence:—

TABLE showing the Rate of Entrance, Weekly Payments, Funeral Allowances, etc., of the Members of the Society, established in in May, 1847.

	Rate of Entrance.	Weekly Payments.	Funeral Allowance.	
			£ s.	£ s.
From 1 month to 10 yrs.	Twopence	One penny	1 10	3 0
		Twopence	3 0	6 0
From 10 yrs. to 40 yrs.	Twopence	One penny	3 0	6 0
		Twopence	3 0	6 0
From 40 " 45 "	Sixpence	Twopence	3 0	6 0
From 45 " 55 "	One shilling	Threepence	3 0	6 0
From 55 " 60 "	One shilling & sixpence	Fourpence	3 0	6 0

From date of entrance, if found clear in account with the Society.

On considering these rates, it was recognised that very grave risks would be incurred if the greater part of the business were obtained from ages 0, 1, 2, 3, or between ages 30 and 40. Eventually, tables prepared by Mr. Edward Ryley, Actuary, were adopted, of which the following is a specimen :—

Age.	Sums Assured for 1d. Weekly.	Age.	Sum Assured for 1d. Weekly.
	£ s.		£ s.
10	11 9	35	5 7
15	9 16	40	4 11
20	8 11	55	3 16
25	7 7	50	3 3
30	6 6		

No life under 10 or over 60 years of age was accepted. Medical examination was required in every case, and immediate benefit on the payment of the first premium was given.

These early days of the Prudential were so crowded with difficulties that it is certain that success could never have been attained had it not been for the wonderful administrative genius displayed by two men, viz.: first, Mr. Henry Harben (now Sir Henry), and, a few years later, Mr. T. C. Dewey, who not only overcame all obstacles, but created a system which has stood the test of half a century and has been copied by other Companies all over the world.

It will be at once recognised that to arrange for the collection of enormous numbers of small premiums is in any case a matter of great expense and difficulty, but if the policy-holders are comparatively few in number and are spread over wide areas the cost and trouble of collection are indefinitely increased. The ideal agency for Industrial business is one in which the agent has to call for premiums at every house in the street and has every street in his district on his book. We are pleased to say that many agents of to-day are rapidly approaching this ideal state, and they may justly be proud of the results of their continued and persistent efforts. In the early days, however, the case was very different. Districts were so wide and scattered that we can only imagine that the agents of those days must have been

most excellent walkers; moreover, as already explained, the lesson of Insurance had not yet been learned by the industrial classes, and the men by whom the Company were for the most part represented were very different from the gentlemen whom I have the honour to meet to-day. Of the conduct of many of these early agents I need say nothing, but even the best of them were altogether unskilled in the work which they were called upon to perform. Who shall define a good agent? His qualities are so many that they almost defy enunciation. But he must, at all events, be honourable, capable, and enthusiastic, and he can never hope to be successful if he does not thoroughly believe in the great blessing which he is bringing about by explaining the benefits of Insurance. I shall attempt, a little later on, to set forth some of these benefits and the answers to the arguments sometimes brought forward against Industrial Insurance.

To return to our history. After two years of struggling it was found that the results obtained from the Industrial business were most unsatisfactory, and the total income of the Company, including that from the ordinary business, was only £3,500 per annum. On investigation it was found that the only representative of the Company who had succeeded in obtaining any considerable amount of business was one who had at the same time represented a society for the insurance of young children, and he had found that there was such a demand for this class of small insurance that he had without great difficulty obtained introductions which resulted in the issuing of Policies to the older members of the family. The Company had already reduced the minimum age of entry to 7, and after very careful consideration it was resolved to commence infantile insurance. The trial was first made in a few districts only, and gradually extended into other districts as time went on. The following is a copy of the first table issued:—

[TABLE.

TABLE OF SUMS PAYABLE FOR ONE PENNY WEEKLY.
Amount payable if child should die after the Policy has been issued.

AGE OF CHILD AT ENTRY.	3 M'ths.	1 Year.	2 Years.	3 Years.	4 Years.	5 Years.	6 Years.
	£ s.	£ s.	£ s.	£ s.	£ s.	£ s.	£ s.
Not less than 3 months and not exceeding 6 months.	0 10	1 0	2 0	2 10	3 0	3 10	4 0
1 year next birthday, - -	0 10	1 0	2 0	2 10	3 0	3 10	4 0
2 years „ „ - -	0 15	1 5	2 5	2 15	3 5	3 15	4 5
3 „ „ „ - -	0 15	1 5	2 5	2 15	3 5	3 15	4 5
4 „ „ „ - -	0 15	1 5	2 5	2 15	3 5	3 15	4 5
5 „ „ „ - -	2 10	3 5	4 10	5 10	6 10	7 0	8 0
6 „ „ „ - -	3 0	4 0	5 5	6 5	7 0	7 15	8 10
7 „ „ „ - -	4 0	5 0	6 0	6 15	7 10	8 5	9 0
8 „ „ „ - -	4 15	5 15	6 10	7 5	8 0	8 15	9 10
9 „ „ „ - -	5 10	6 5	7 0	7 15	8 10	9 5	10 0

If the child should die within three months from the date of the Policy no sum will be payable.

The Table was shortly replaced by the following:—

TABLE OF SUMS PAYABLE FOR ONE PENNY WEEKLY.
 (No higher Premium can be taken.)

Age at Entry.	AMOUNT PAYABLE IF THE CHILD SHOULD DIE AFTER THE POLICY HAS BEEN ISSUED FOR										
	Three Calendar Months.	One Year.	Two Years.	Three Years.	Four Years.	Five Years.	Six Years.	Seven Years.	Eight Years.	Nine Years.	Ten Years.
1 year next birth-day	£ s. 1 10	£ s. 2 0	£ s. 2 10	£ s. 3 0	£ s. 3 15	£ s. 4 10	£ s. 5 15	£ s. 6 15	£ s. 7 15	£ s. 9 15	£ s. 10 0
2 years „ „	1 10	2 0	2 15	3 5	4 5	5 10	6 10	7 10	9 10	10 0	
3 „ „ „	1 10	2 0	3 0	4 0	5 5	6 5	7 5	9 5	10 0		
4 „ „ „	1 15	2 15	3 15	5 0	6 0	7 0	9 0	10 0			
5 „ „ „	2 10	3 10	4 15	5 10	6 10	8 15	10 0				
6 „ „ „	3 0	4 10	5 5	6 5	8 10	10 0					
7 „ „ „	4 0	5 0	6 0	8 5	10 0						
8 „ „ „	4 15	5 15	8 0	10 0							
9 „ „ „	5 10	7 15	10 0								
10 „ „ „	7 10	10 0									

If the child should die within Three Calendar Months from the date of Policy no amount will be payable

The following Table of Rates, which is that now in use by the Prudential Assurance Company, may be taken as fairly representative of those adopted by the leading British Companies:—

TABLE C.—WHOLE LIFE ASSURANCE (JUVENILE).—SUMS PAYABLE FOR A PREMIUM OF ONE PENNY WEEKLY.

No higher Premium will be taken.

Age next birthday.	AMOUNT PAYABLE IF THE ASSURED SHOULD DIE AFTER THE POLICY HAS BEEN ISSUED FOR											
	Three Calendar Months.	Six Calendar Months.	One Year.	Two Years.	Three Years.	Four Years.	Five Years.	Six Years.	Seven Years.	Eight- Years.	Nine Years.	Ten Years.
1	£ s. 1 10	£ s. 2 10	£ s. 3 0	£ s. 3 10	£ s. 4 0	£ s. 4 1	£ s. 5 0	£ s. 6 0	£ s. 7 0	£ s. 8 0	£ s. 9 0	£ s. 10 5
2	1 15	3 0	3 10	4 0	4 10	5 0	6 0	7 0	8 0	9 0	10 5	
3	2 0	3 10	4 0	4 10	5 0	6 0	7 0	8 0	9 0	10 5		
4	2 5	4 0	4 10	5 0	6 0	7 0	8 0	9 0	10 5			
5	2 10	4 10	5 0	6 0	7 0	8 0	9 0	10 5				
6	3 0	5 0	6 0	7 0	8 0	9 0	10 5					
7	3 10	5 0	7 0	8 0	9 0	10 5	If the assured should die be- tween the age of 16 and 21 years the sum payable will be)					£10 10s
8	4 0	5 0	8 0	9 0	10 5							
9	4 10	5 0	9 0	10 5	If the assured should die after the attainment of age 21 the sum payable will be . . .)							£10 15s
10	5 0	5 0	10 5									

If the assured should die within Three Calendar Months from the date of the Policy no amount will be payable.

The early tables were, of course, to a large extent tentative, and as experience accumulated it was found possible to increase in a considerable proportion the amounts payable in respect of the younger entrants. In the first table the amount payable on the death of a child aged one year after having been insured for a complete year was only £1, but this was increased to £2, and then again, in 1871, to £3, at which figure it now stands. In the case of a child entering at age 9 years the amount payable after the policy had been in force for three calendar months and until it had been in force twelve months was £5 10s, whereas now it is £4 10s after three months and £5 after six months. In the same case, however, it will be noticed that the amount allowed after twelve months is now considerably more than it was under either of the two original tables.

Many other alterations will be observed on comparing the tables. In the next place it is interesting to consider the changes which have taken place in regard to the agents of the Company. Fifty years ago there were in all less than one hundred of these, whereas at the present time there are about 19,000 agents and superintendents, all of whom have been carefully selected, and are almost without exception men specially suited to the work.

In 1854 the terms of remuneration to agents were as follows:—

1. Entrance fee of one shilling.
2. Ten per cent. commission on the premiums received on all policies.
3. A bonus of five shillings for every hundred pounds assured on all new business, the premiums on which have been paid for three months.

Advances of five shillings per week on account of fees and commission were allowed, such advances being required to be repaid with interest at the rate of 5 per cent. It was very soon recognised that this scale of payment was capable of very considerable improvement. One of the greatest difficulties which the Office and their staff of agents has to contend with is that of lapsing. A lapsed policy is unsatisfactory to all parties concerned, and, far from being the source of enormous profit which it is supposed by ignorant persons to be, it is for the most part a source of very great loss, and particularly so during the early years of the policy. Any agent can with little trouble obtain a large amount of new business for a well-known and respected Company, but it requires a good agent to maintain sound durable business. The agent must be paid for his work of explaining the benefits of insurance so as to make it perfectly evident that it is the duty of all, and particularly of the working classes, to insure their whole family, but the agent's payment must be so regulated that he will receive the largest amount of remuneration in proportion as he is the most successful in keeping the business which he has once obtained. For this purpose the Prudential instituted the plan of paying some portion of his commission in proportion to the net increase of his weekly debit. As experience has increased, and as the general position of the

Company warranted alterations, so the terms allowed to the agents have been improved, and the following are some of the more important improvements:—

First, and by far the most important, is the decrease in the area which an agent is obliged to traverse in order to collect his weekly debit. The lot of an agent of a small Company is far different from that of the agent of a large one having such extensive business that, as already stated, in many cases every house in a street contains policy-holders in the book of the same agent. This point must always be borne in mind when attempting any comparison of the work done by an agent in return for a certain amount of commission.

2. In calculating the net increase for purposes of commission the agents were for many years required to include all claims and transfers. For over thirty years this has not been required of them, and for several years no lapses of policies on lives aged 21 or upwards have been required to be taken into account.

3. For many years new business fees were paid in respect of net increase only, whereas now all new business which has paid for eight weeks is allowed for to the extent of four weeks premiums.

4. Formerly no commission was paid on an increase of debit until it amounted to five shillings, so that in a slowly-growing agency over four shillings increase might be collected for many weeks without earning the special allowance. At the present time payment is made in respect of an increase of sixpence.

5. Allowance is now made for postage and special facilities provided for remittance. Both of these items were formerly considerable additions to the agent's troubles.

6. From time to time special grants have been made to agents as a reward for long and faithful service.

7. A special Staff Provident Fund has been instituted which may be compared to an old-age endowment table, at rates far below the actual cost price.

8. Monthly retiring allowances have been granted to large numbers of agents who have faithfully served the Company for many years.

9. Individual agents at the present time almost invariably canvass for ordinary business as well as Industrial, and in this manner very largely increase their annual income.

As regards the method of collecting Industrial premiums, many improvements have been suggested from time to time, but the Prudential have maintained practically the same method throughout. A small book is provided for policy-holders, and in this the agent places his initial for each weekly amount he receives. The Collecting Societies Act of 1896 provides that one penny may be charged for this and a further penny for the policy, but these charges are seldom made. Where there are several policy-holders in one family residing in one house (as in fact is usually the case) only one book is necessary, and the total amount received from premiums each week is entered as one item and initialed for. Each agent has his "collecting book," which contains a full list of the policy-holders in his "debit" arranged in the most convenient order so as to assist him when collecting. He remits the cash collected every week to the Chief Office, together with a simple form of account in which is set out the amounts collected, remitted, in arrear, etc. The whole system is simple, inexpensive, and effective.

At the recent International Congress of Actuaries which was held in Berlin, and at which I had the honour of speaking in reference to a very interesting paper on Industrial Insurance presented by F. Schooling, Esq., there was some considerable discussion as to the best methods of collecting premiums. M. Lexis, of Gottengen, recommended the collection of Industrial premiums by local unions and associations, as well as by the proprietors of large warehouses and factories. He argued that great expense would be saved if such a practice could become more general. I pointed out that in England such a plan would be altogether impracticable for the following reasons:—

1. The working classes in England strongly resent any attempt at interference on the part of their employers in matters affecting their own private affairs, and particularly as regards their efforts towards thrift, of which the most universal was industrial insurance.
2. The homes of employees of any one large factory were generally widely scattered, and the suggested method of collecting would result in gaps in the agent's ideal collecting list which would be irritating to him, and, moreover, would not materially decrease his labours.

3. The agent would not have the same opportunities of canvassing new business, and this would result in a less percentage of policies amongst the said employees, and a consequent retrogressive step in the development of insurance.

I might also have added that the workers employed in any factory are not necessarily permanent, and it is quite certain that the same simple and convenient methods of transfer could not be arranged for as is now the case with the policy-holders in any big Company who find it convenient to remove from one district to another.

L. Francois, of Brussels, said that the method of collection employed by the "Victoria," of Berlin, seemed to have yielded the best results. It consisted in the delivering to the agents of sheets with 52 coupons attached to them, which were torn off at every payment of premium and used as receipts by the assured. This method, he said, had been adopted by his own Company, and had the following advantages:—

1. It is simple, methodic, and inexpensive.
2. The accounts and books can be made up rapidly.
3. The control of the agencies becomes almost automatic, and only a few inspectors are necessary.

In the course of the discussion I asked for further information with regard to this method, and after explaining briefly the method adopted by my own Company, said that after many years' experience we had come to the conclusion that it was so exceedingly simple and economical that any other method which could be shown to be an improvement must be good indeed. Subsequently, by the courtesy of the Directors of the "Victoria," I was invited to the head office, where I had an opportunity of seeing the method in operation. The sheets of coupons, samples of which they very kindly supplied me with, were divided into four parts, with 13 coupons on each, every one of which was dated. The necessary particulars of the policy were written on the margin of each one of the four parts of the sheet. The agent received only 13 coupons at a time, and he took these sheets round with him when collecting, and on his return had to account for the

necessary money or coupons. Different coloured sheets of coupons were made use of for different amounts of premium. It was explained to me that of course fresh sheets of coupons were made out *for every policy-holder each year*. In large centres collectors were employed at fixed salaries for collecting only, and in case of their failing to obtain any of the premiums other men were deputed to call upon the assured. They particularly impressed upon me that our system would not be suitable for their agents, and that with the coupons defalcations were practically impossible. I was very interested in the explanation of the working of the method, but I was by no means convinced of its superior advantages, and was secretly proud to think that even without coupons defalcations were exceedingly rare amongst our own English insurance agents.

If any proof were required of the steadily-growing popularity of Industrial Insurance, the figures published in the Board of Trade returns should be sufficiently convincing, and as these may be of some interest I reproduce figures for some years past.

DIAGRAM (1), page 65, refers to the numbers of policies in force, the actual figures being as follows:—

1887 .	9,145,844	1893 .	13,213,554	1899 .	17,857,134
1888 .	9,208,671	1894 .	13,324,778	1900 .	18,653,846
1889 .	9,412,991	1895 .	14,990,581	1901 .	20,005,127
1890 .	9,432,778	1896 .	15,301,621	1902 .	21,216,506
1891 .	9,879,928	1897 .	15,860,654	1903 .	22,518,046
1892 .	12,834,142	1898 .	17,230,712	1904 .	23,810,937
				1905 .	24,668,532

DIAGRAM (2), page 67, shows the amount insured according to the figures as under:—

1887 .	83,434,487	1893 .	126,797,704	1899 .	172,649,457
1888 .	83,891,620	1894 .	128,064,110	1900 .	181,135,538
1889 .	85,920,639	1895 .	144,142,569	1901 .	195,176,611
1890 .	86,203,873	1896 .	147,189,925	1902 .	207,547,153
1891 .	90,983,761	1897 .	152,075,807	1903 .	221,137,641
1892 .	122,760,631	1898 .	165,990,481	1904 .	234,217,606
				1905 .	241,866,981

DIAGRAM (3), page 69, shows the total assets; the figures are as follows:—

1881 .	1,588,915	1889 .	7,187,076	1897 .	16,511,278
1882 .	2,060,856	1890 .	8,737,936	1898 .	18,157,993
1883 .	2,411,754	1891 .	9,662,026	1899 .	19,775,676
1884 .	3,065,285	1892 .	10,771,689	1900 .	21,512,384
1885 .	3,834,709	1893 .	11,385,953	1901 .	23,314,994
1886 .	4,667,916	1894 .	12,439,285	1902 .	25,100,869
1887 .	5,566,131	1895 .	13,803,227	1903 .	27,351,829
1888 .	6,248,513	1896 .	15,003,789	1904 .	30,021,549
				1905 .	32,424,328

It should be noticed that in 1887 the assets represented £6 13s 2d per cent. of the sum assured, whereas in 1905 they represented £13 8s 1d. In Diagram (4), page 71, I show the total amounts paid away in claims during the years 1881 to 1905 inclusive. The figures represented by the columns include all claims paid from 1881 up to the given year. The following are the amounts actually paid in claims each year. The total is £59,661,440, as represented by the last column in the diagram:—

1881 .	697,778	1889 .	1,663,661	1897 .	2,751,230
1882 .	779,985	1890 .	1,928,406	1898 .	2,912,046
1883 .	957,350	1891 .	2,184,551	1899 .	3,131,916
1884 .	1,124,622	1892 .	2,537,261	1900 .	3,410,642
1885 .	1,250,250	1893 .	2,451,965	1901 .	3,866,537
1886 .	1,366,537	1894 .	2,547,832	1902 .	3,738,426
1887 .	1,461,832	1895 .	2,418,754	1903 .	3,916,391
1888 .	1,588,174	1896 .	2,774,101	1904 .	3,944,927
				1905 .	4,255,966

The following figures, which are taken from a paper presented at the last Actuarial Congress by F. L. Hoffman, of the Prudential of America, are interesting as showing the progress of Industrial Insurance in various countries. Mr. Hoffman gave the monetary amounts in dollars, but I considered it would be more convenient to show the amounts in sterling. It will be noticed that the average amount of policy is much greater in America than in England. This is mainly due to

the higher standard of value in that country, where the five-cent (practically 2½d) premium takes the place of our penny premium.

	No. of Com- panies.	No. of Industrial Policies, 31st December, 1904.	Amount of Insurance, 1904.
United States . .	17	15,674,384	£438,890,190
England	20	23,810,937	234,217,606
Germany	14	5,024,667	44,965,677
*Australia	6	308,322	6,607,054
Canada	5	296,550	7,137,382
Other Countries . .	.	100,000 est.	821,946 est.
Total . . . . .	..	45,214,860	£732,639,855

* For 1903.

It is difficult indeed to imagine what would be the state of the working classes to-day if there were no Industrial Insurance. The cost to the State would certainly be very much greater, but what is far more important is that the spirit of independence could not under any circumstances be so universal. The most effective help is invariably self-help, and *this* Industrial Insurance encourages in the most stimulating manner. In thousands upon thousands of cases the death of a member of a family would, except for the insurance policy, result in the degradation of a pauper funeral, or, what is perhaps even worse, an attempt to avoid it by borrowing, where in the majority of cases the money-lending fiend would be the only available lender. Too often the only result would be the downfall of a humble but happy home. It is indisputable that Industrial Insurance produces two most important results—

1. It prevents in innumerable cases the necessity of borrowing at ruinous rates.
2. It encourages the idea of independence and thrift.

The Industrial agent can produce no stronger argument for insurance than the terrible effects of borrowing. Once the

working man begins to borrow he will only too often sink deeper and deeper into debt, until the knowledge of the impossibility of repaying either causes him to lose heart entirely, or, it may be, to seek to forget his troubles by means of intemperance. All believers in the temperance movement should be the strongest advocates of insurance. A working man receives weekly wages, and if he is a decent man, with a good wife, he will, even although poor, manage to keep up a respectable and happy home and bring up his children in a manner which is a credit to both him and his wife. His opportunities of saving, however, are not many, and, besides this, even if he attempts to save, trouble in the form of death of one or more of the members of his family may come upon him at any moment. What in such circumstances is he to do? Can one wonder if he gives up the struggle and allows the ruin to overwhelm him and his? If a man is a good agent he will be able to put these facts plainly forward, and thus have the satisfaction of knowing that he has prevented the possibility of ruin to many a peaceful home.

Hardly less important is the encouragement to the habits of thrift. It is well known that in the great majority of cases the few pence which are paid for insurance would not be saved otherwise. Once the habit of putting by a few pence per week for Industrial Insurance has been acquired, the advantages of saving becomes more clearly recognised. The attempt at insurance through the agency of the Post Office has proved, as we all know, a most dismal failure for obvious reasons, but I would venture to suggest that many millions deposited in the Post Office Savings Bank, and made up of small sums of not more than fifty pounds, have originated through the habits of thrift taught to thousands by the Industrial Insurance agent. Mr. Farrell, in an address on Industrial Life Assurance, delivered at Brisbane in 1902, said:—

“The first step in the path of thrift is the hardest to take, the first lesson in the school of economy the hardest to learn. Industrial Assurance facilitates it amongst those who would be otherwise destitute. It makes the working man a truer man and a better citizen; it is the infusion of arterial life in the industrial body of the State, and the whole State is the gainer. The man who most needs the protection of insurance is the wage-earner; on this truth rests the case for Industrial Assurance.”

Again and again the argument is brought forward that infantile insurance is a direct encouragement to child murder. It is a curious fact that the great majority of those who so argue are quite ignorant of the fact that there is a statutory limit of £6 for insurance on the lives of children under five, and £10 until age ten is attained. They are also generally quite unaware of the fact that Insurance Companies almost invariably limit the amounts insured still further. At the very young ages the amounts payable are so small that there is certainly no more than sufficient to provide for funeral expenses. It is difficult, under these circumstances, to see how the payment of the sum insured could possibly afford any incentive to the heinous crime of child-murder. If one can imagine anyone calmly contemplating such a crime they must also admit that the risk of discovery is much greater in cases where the child is insured, for this very fact invariably induces a more searching examination of the circumstances. Then, again, there is in the case of insured children the report of the agent, all of whom would be dangerous inquisitors in any case of crime. In cases of illegitimate children, the risk of crime is undoubtedly greater, but these cases are not accepted for insurance in infancy.

One of the greatest dangers in the lives of the infants of the working classes is, it is now clearly recognised, the unsuitable food with which they are supplied, and it is for an improvement in this matter that one could wish the misdirected energies of the opposers to infantile insurance might be far more profitably applied. In some Companies in America, literature relative to the most suitable feeding of infants is supplied by the Insurance Companies for distribution by the agents amongst the families of the working classes. The idea appears to be a very good one, and worthy of imitation.

Mr. F. Schooling, in his paper before referred to, says:—"The insurance of children goes hand-in-hand with "the spread of such knowledge, for both appeal to the thrifty "and provident parent, and it is the dissolute or improvident "father or mother who neither makes provision for funeral "expenses in the event of the death of the child or takes any "heed as to what it is fed upon."

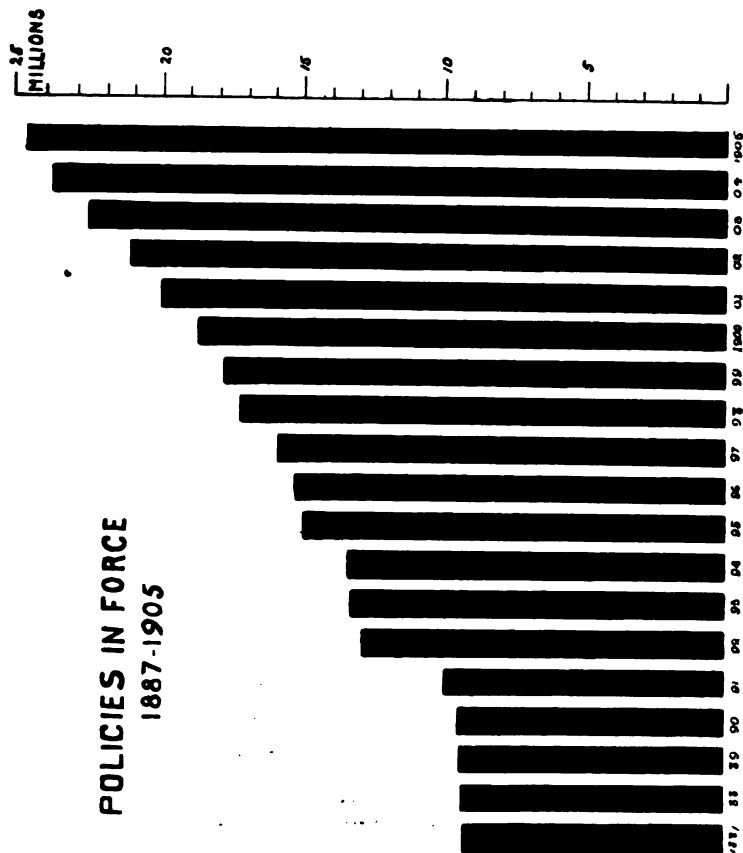
Perhaps the most reasonable argument ever brought

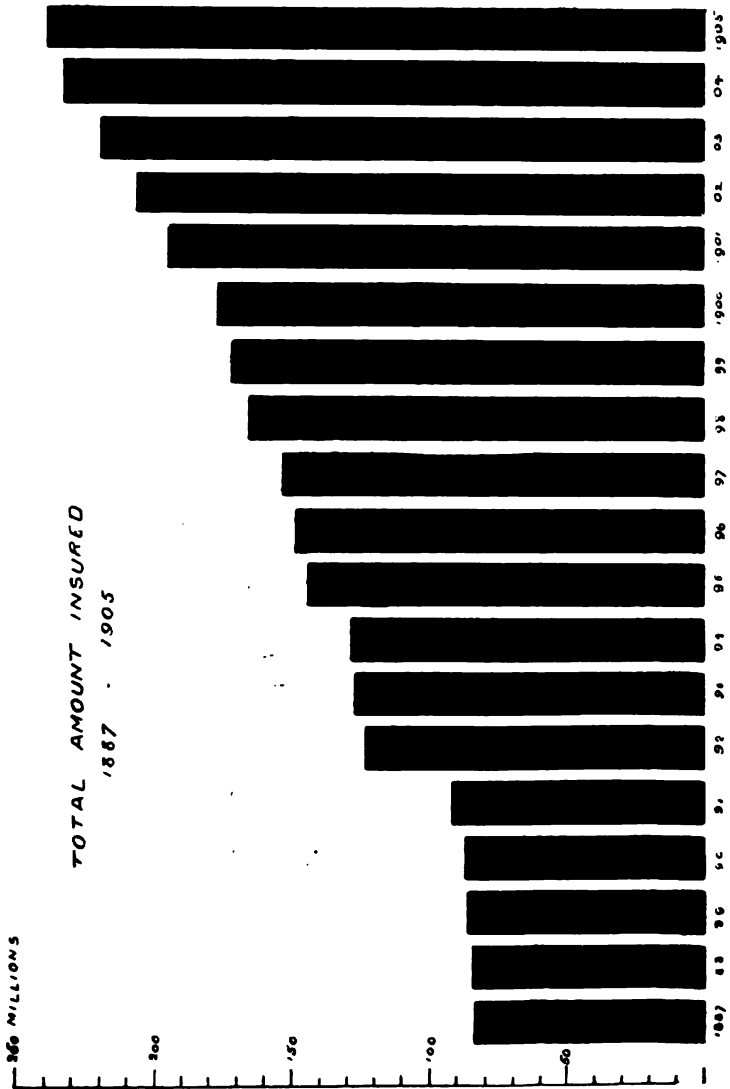
against Industrial Insurance is its expensiveness. It is a retail article, and, as compared with the Ordinary Assurance, which we may call the wholesale article, it undoubtedly is expensive, although even here we might point out that annual premiums are much cheaper than quarterly premiums, and the increase in the rates for Industrial Insurance, which is payable 52 times a year, is proportionately much less than the usual increase of quarterly as compared with annual premiums. I am fully aware that upon actuarial lines the comparison is not strictly correct, but I maintain that for our purpose the argument is a fair one.

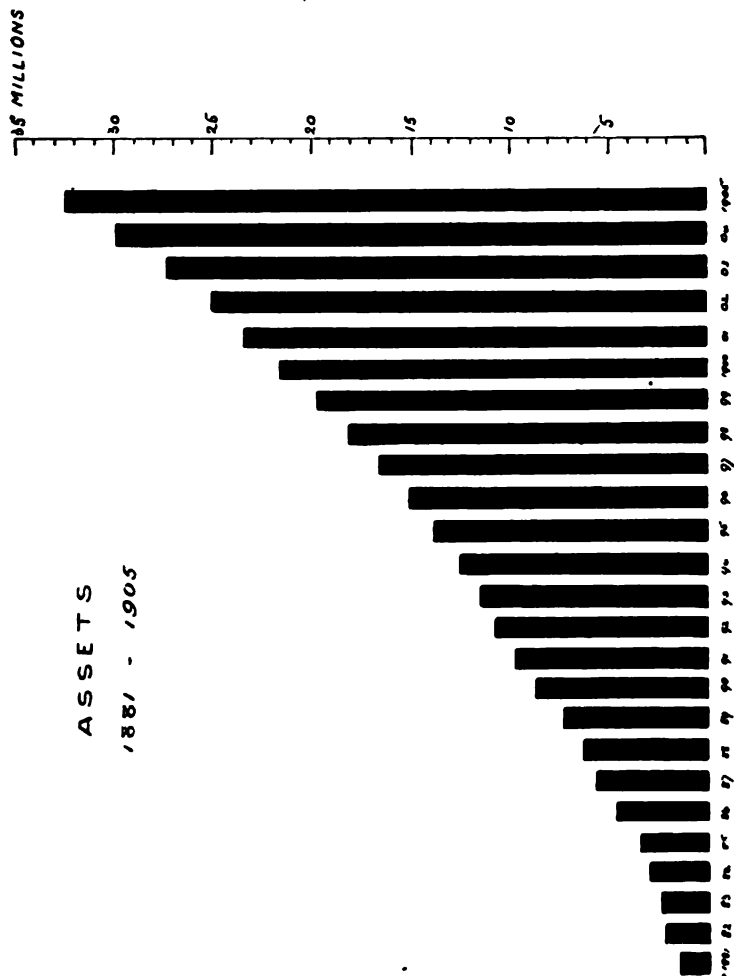
It is certain that Industrial Insurance is impracticable unless the premiums are collected, and, moreover, that the total amount of insurance would be nothing like so great if it were not canvassed for; it is also, I think, proved that Industrial Insurance is not only a great advantage, but a national blessing; it is therefore useless to speak of expense unless some cheaper method of supplying the same article can be discovered.

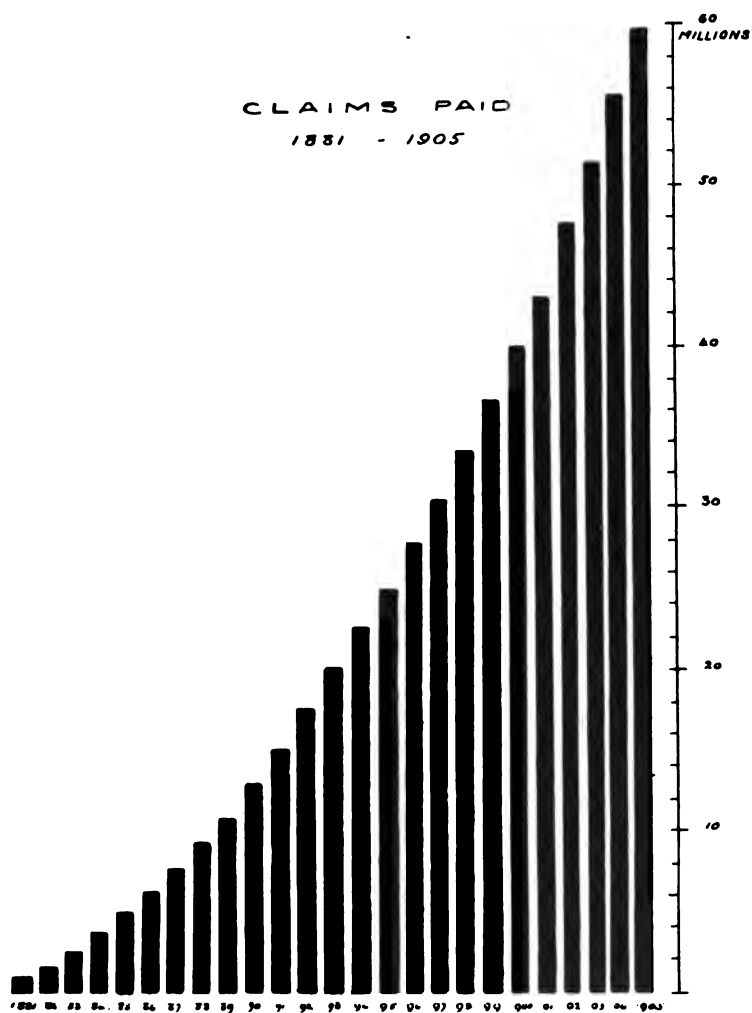
Insurance brings to the doors of the working classes exactly what they want; there is no trouble, none of the red tapeism of the Circumlocution Office; everything is managed expeditiously, and when a claim becomes payable the money is handed over at once just when it is most needed, and in this respect the motto, "*Bis dat qui cito dat*," could not be truer. As we have already said, Ordinary Insurance is cheaper, but every encouragement is offered to Industrial insurers to take out small policies for £50 with premiums payable quarterly, and it is certain that many thousands of these policies are the result of previous Industrial policies. Anyone who will carefully consider the labour involved by a single policy subject to a weekly penny premium will be bound to admit that it is one of the most wonderful productions of the age. A short time ago a popular form of entertainment was what was known as a "Penny Party," at which each visitor was expected to bring what he or she considered the best pennyworth obtainable. At one of these which I attended I was at first voted equal with another visitor who presented a penny postage stamp. My contribution was a penny Industrial policy. On further adjudication I obtained what I think you will admit was a well-merited prize. A letter is not collected, but carried to the post, and

merely delivered as directed. A penny premium is collected and delivered. The work entailed by a penny premium is out of all proportion to that entailed by the postage of a letter. The Industrial Insurance Company, after transacting all this work, is able to pay claims, which, in proportion to the premiums, are not very far short of those paid on Ordinary policies, whereas the Post Office, after I had patronised their business for a whole year, expected me (and I had not the heart to refuse) to provide Christmas-boxes for their agents.









THE AGENCY SYSTEM OF INSURANCE COMPANIES.

By ROBERT CHAPMAN,
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*A Paper read before the Insurance and Actuarial Society of Glasgow,
3rd December, 1906.*

WHEN you honoured me with the request that I should this winter deliver a paper before your Society, I cast about in the fertile field of Insurance interests which lay before me, with the desire to find a subject which would, while coming within the scope of my powers, be one interesting and useful to all members of the Society, without regard to any particular branch of insurance work with which they might be more immediately connected. In my subject, "The Agency System of Insurance Companies," I am confident I have one which at any rate meets the last-named requirement, as no one, whether junior or senior, can be indifferent to what is the very life-blood of the system which furnishes for him his life's work.

Few of us, I fancy, realize the unique position occupied by the agency system of our business. We have in the Insurance Companies of this country organizations which, taken collectively, occupy in point of magnitude of financial transactions fourth—if not third—place in the financial interests of our land. The important work of obtaining business for these companies is carried on by an army of men who are not salaried employees of the companies, who have not been trained by those companies for the work and over whom the companies can exercise very little direct control. If you look at any of the other important financial and commercial interests which exist among us, you will find that not only is the managerial and clerical work conducted by salaried servants, but also that the bulk of those who have been picturesquely termed the Ambassadors of Commerce, the men who go out to shop and factory, to cottage or to hall, to introduce the

business of those who employ them, the men who are responsible for bringing the grist to the mill which keeps the machinery in constant demand, are men bound by the strongest tie of self-interest, that of receiving a settled stipend, to do their work, and whose business life is at the absolute disposal of their employers. The agent to an insurance company is in an entirely different position. He is a volunteer—a paid one, certainly, but only by results. He is generally a professional or commercial man, whose interests are naturally centred first in his own profession or occupation and who adds thereto an insurance agency, either because of his connections, which will automatically yield him business of this nature, or because he has spare time at his disposal and believes that he has the aptitude to secure business which will aid him to increase his ordinary income.

Of this country, at any rate, it may be said that insurance companies have scarcely any other style of representative than this of spare-time agents. Brokers who devote the whole of their time to insurance work—always, however, on commission terms—are with us and do a large business; but large as this business is, viewed from the standpoint of single agencies of the usual class, it forms a very small proportion indeed of the bulk of the premium income gathered in by insurance companies, and for the present outlook we may disregard it as a factor, and say that the huge amount so accumulated is supplied by the men who are unattached in any official sense, being merely—as they are called—agents, who undertake voluntarily to represent Offices they select and who can at any time and at very little inconvenience to themselves transfer their services, with a large share of the business existing in the agencies, to other institutions of a similar nature. It is, therefore, remarkable that what appears on the face of it to be rather a haphazard system should have yielded such good results; but the figures are undeniable and point in no uncertain way to the fact that, so far, at any rate, as the past is concerned, the system has worked well. The premium income of all insurance companies of this country—fire, life, and casualty of all descriptions—is shown by the latest available returns to be some sixty-five millions of pounds annually—truly a gigantic sum! And when it is considered that this is gathered mainly by the exertions of our agents, without whose efficient services much of this thrift would never have been born, our admiration goes out, to a system so simple and yet so effective.

PRESENT-DAY DEFECTS.

Great admirer as I am of this system, which has been carried on so successfully for so long a period, I wish I could devote the time I have at my disposal to-night to going step by step with you through the entire working of it with nothing but commendation to bestow. But abuses have crept in, and it is vain to cry peace when there is no peace. I therefore propose to direct my remarks to what appear to me to be the weak spots of the system as it exists in the present day, rather than to follow what would be the much more pleasant course of reviewing only the many sides of the system which call clearly for our admiration as we pursue the tenour of our work. Like all parasitic growths, these abuses when originated were of small account; but, the appetite growing with what it fed on, they have reached dimensions which to the reflective mind not only bespeak impairment of usefulness, such as undoubtedly exists at present, but threaten the very existence of the system.

We will take first the degradation of the status of the insurance agent, caused by the ease with which insurance agencies can now be obtained. Compared with the procedure of former years, the present-day mode appears a supremely ridiculous one. The records of the Company I have the honour to serve show that at its inception and for many years thereafter an agency for it was sought after with diligence and that when secured it was greatly prized. Stately negotiations were followed by strict enquiries on the part of the Company as to the suitability of the applicant. If these enquiries resulted satisfactorily, appointment ensued, when in all cases, without regard to the prospective agent's standing in the business or professional world, guarantees for his intrusions were asked for; and, strange as it may appear in light of present-day usages, these were invariably obtained. After appointment, the agent was expected to look upon the interests of the Company as committed to his charge, to give a considerable portion of his time to the working of the Company; and most loyally were these requirements fulfilled. This formed an ideal state of affairs—too ideal, perhaps, to last long, looking to the slender thread of control held by the Offices over these men.

The smart man, ubiquitous in business life, arose in the business of insurance as he has arisen in others. His watchword was progress, without respect to seemliness, and unfortunately he

has been followed in his evil practices by many, until competition in our business has ceased to be legitimate competition, and has degenerated into an unseemly scramble for supremacy, the motto of many engaged in insurance work at the present day being evidently "Get business—honestly and decently if you can—but get it." Some companies located in England sought, legitimately enough, pastures new in the sister countries. Those established in Scotland and Ireland in turn invaded England. Provincial companies, who up to this time had been content to attract business from the local centres where they were established, finding their restricted spheres of operations encroached upon by these progressive Offices, also sought expansion; with the result that agencies grew apace—confined still, however, to suitable men of standing and influence. These were the days when all agents corresponded with head offices, branch offices being unknown. As business grew and agencies became established over the length and breadth of the land, the branch office was instituted, when competition became fiercer than ever, the managers of these branches being judged largely by the results in the way of new agencies attracted, with expected increase of figures therefrom. Results which could even then have been foreseen followed. All suitable men were very shortly enlisted as agents. It might have been expected that a pause would then have taken place in the establishment of new companies and that, if the thirst for expansion on the part of the existing companies was not appeased, caution, at any rate, would have suggested a slower pace, devoted to consolidation of existing connections. The reverse has been the case. Appointment of agents has grown more reckless each year, until now that army is composed of the most heterogeneous conglomeration of individuals it is possible to imagine. So well is this known to be the case, it has been said that nowadays if one scratches a day labourer he will find an insurance agent. This is a lamentable state of affairs. Instead of these agencies being sought after as honourable and profitable means of employment, the name insurance agent has become a by-word, one almost for derision and reproach. The substantial men who have the means of introducing a large volume of business, automatically reaching them, continue to hold agencies, the monetary consideration therefrom being too valuable to relinquish; but all pride in that part of their business is at an end, as shewn by the growing unwillingness year by year on their part to do

anything further with these agencies than to forward such business as comes to them in natural course. The holders will not go into the market-place to compete for business, and to be classed with the rag-tag and bobtail who style themselves equally Insurance Agents. The large class of able men whose prototypes in the past applied for agencies, not by reason of existing connections but from intention to give honest hard work and well-directed effort to attract insurance business, now fight shy of a calling which has been brought to so low an ebb and the profits of which are disappearing to vanishing point owing to this injudicious crowding of the business with undesirables, and other evil practices which we shall touch on later.

That the onus for this state of affairs lies with Insurance Offices, or rather with injudicious representatives thereof, and not with the members of the general public or even with the agents so appointed, is shown by the many cases one comes across where people appear to have had insurance agencies, like greatness, thrust upon them. In my Inspector days, I have met agents of this type, as doubtless many of you have done—men who, when approached by an official of an office introduced by his local agent, reply, in response to a request that they should consider the matter of insurance, as applicable either to them or to their property, that they are themselves insurance agents. Asked which Office they represent, they are in many instances unable to name it, a wild search through the drawers of the office desk or under the counter sometimes resulting in the unearthing of some prospectuses and other papers still carrying the pristine freshness with which they were despatched from the printing shop. From these, this latter-day representative of an Insurance Office is able to supply its name. A little judicious handling almost invariably brings to light the fact that this precious agent's own life is not insured (his stock or his furniture may be—through the agency of another company), also that he had not carried through one single proposal for any of the departments of the Office he was supposed to represent—in fact, that he had never made the slightest effort to secure one, the explanation of the existence of the agency being also almost invariably that an official from the company had called and, although told that his prospective victim held no aspirations towards an agency for any company, nor any hope that he could introduce business if he were endowed with one, an appointment letter, with a large supply of stationery, had followed the visit. Is this not

the very height of folly? Money shovelled along the gutter would not be more uselessly disposed of than that which is employed in creating this free tip for stationery. Is it to be wondered at that when such is in existence one of the many worries of some managers' lives, is the ever-present growth of the expense ratio on which the business as a whole is conducted?

"OWN CASE" AGENCIES.

Worse abuses, tending to the decay of our agency system more even than this one, bad as it is, exist. In the forefront of all, I place payment of commission direct to the insured, or when, as is the case with Fire Offices, rules forbid such conduct, the attainment of the same result, through the thinly veiled disguise of an agency created for no other purpose than to obtain a person's or a firm's own insurances by allowing commission thereon to them without any hope of a general business, such as should exist in all agencies, following. No other practice indulged in at the present day is so harmful as this to our business. Commission is a payment for services duly rendered and it should not be prostituted to the level of a discount or, not to put too fine a point on a phrase, to that of a bribe. In the dignity with which the business of insurance as a whole is conducted, in the financial skill with which the affairs of the different Offices are administered, commercial life has much to admire and to imitate; but on this point it is with sorrow one has to confess, that the commercial man sets an example to his insurance brethren by the manner in which he safeguards the interests of his customers, and by doing so those of his own business; although often he is a fellow criminal in the debasement of insurance work, by demanding or accepting discount under the name of commission. Go to any commercial house of standing, give as a private individual an order of large dimensions—larger, perhaps, than would be given by the ordinary customers of the firm—ask for the same terms as those given to traders, or for a discount equal to the expense which would have been caused to the firm by the order reaching them through the usual trade channels, and note the answer you will receive. An indignant refusal it will be, without doubt. To such an extent are precautions for the safeguarding of their customers' and agents' interests carried, that a commercial house will rarely if ever supply goods direct to a private individual even at the retail price of the moment. To avoid even the appearance of evil, an applicant who asks for such treatment, on the plea that the

goods of the firm cannot be obtained in his neighbourhood, is politely informed of the name of the nearest retail vendor who stocks them or else arrangements are made to supply him through a source created for that purpose. Yet, the same manufacturer or wholesale trader, jealous to the extreme of any attempt to weaken the bond existing between him and his *clientèle*, will come unblushingly forward to an Insurance Office, demanding payment to himself of the agency commission on his own insurances, and—to our shame be it said—seldom is he refused. Indeed, as a rule, it is he who is approached and educated up to the point of taking such steps as will transfer the payment intended for hard-working agents or brokers to his own pocket, by the contemptible subterfuge of applying for an agency for a company which he has no intention of using for any other purpose than this most illegitimate one. While it may be too sweeping a statement to make, that all Offices lend themselves to this abuse of direct commission payments, no one in the business can shut his eyes to the fact that it is well-nigh so. Some may use the method more than others. A few Offices and their officials may possess the unenviable distinction of having originated the system, while others may lay the flattering unction to their souls, that they only follow from motives of self-preservation. It is self-preservation of a very suicidal nature. Slowly but surely this one abuse is killing the agency system of insurance companies, as that system was known to our forefathers. Every year the disinclination of the desirable men to accept agencies, unless these are accompanied by a substantial amount of existing business left by a deceased agent, is becoming more marked. Those who already hold agencies of value, while they retain them, are becoming more and more averse to the work necessary for expansion, arguing, and rightly so, that as all the plums are being picked out of the pudding by these bogus agencies and direct commission payments, the game of soliciting business, when only small proposals remain, is not worth the candle. As illustrative of the extent to which this destroying of the usefulness of the old agency system has been carried, a story, which I believe is a perfectly true one, is told of one of the originators, if he were not the very originator of the method. Sitting in his office, he was asked by a visitor “Who are the men—in this city for instance—who produce this large business of yours? From what class do you draw your agents?” Touching the bell on his desk, he asked the attendant who answered the summons to bring him

the town's directory, which volume he solemnly handed over to his interrogator, saying "That is my Agency Register." Whether this was intended to be taken literally or not, it was a sorry confession to make. The old agency system had been built up by men wiser than he, who knew that many hands make light work and that an army of practically voluntary workers paid by results could in the long run achieve much better results than a few salaried officials, attempting to cope with prospective customers without the intervention of a middleman, could possibly do. Yet the greed for immediate gain, the getting the better of their fellows, by the offer to large policyholders of a reduction to which they were not entitled, has dazzled so many insurance men, that to-day the agency system, which has so well proved its worth and of which we have all been so proud, seems doomed to extinction unless wiser counsels yet prevail.

ABUSE OF LOCAL BOARDS.

These matters affect the general public and have become almost as well known to the man in the street as they are to insurance men. I come now to one matter of which little is known outside the offices of Insurance Companies and those of the individuals directly affected. I refer to Local Boards, which are nowadays intimately connected with the agency system of insurance companies. Being the representative of a Company which has suffered as much as, if not more than, any Company has done by the institution of this mode of robbery, I approach the subject with a good deal of trepidation, knowing that, feeling strongly regarding it and smarting under the sense of many wrongs perpetrated against my Company, I am not perhaps qualified to handle it in the judicial manner in which subjects of public discussion should be approached. Doubtless, when local boards were first instituted they were of as *bona fide* a character as are the head office boards which are so great an honour to our business, being then composed of men of position and wide influence, whose services, apart from the direct business introduced by them, were of value to the companies and whose names would vouch for the respectability and standing of the companies whose headquarters were situated at too great a distance from the districts in which it was sought to establish these local boards, to allow of the names of the head office directors fulfilling that purpose. This state of affairs, however, did not last long. Regulations, necessary and most beneficial to

the general well-being of the business, were in force with fire companies, which kept at a uniform amount the scale of commission it was permissible to pay to agents of these companies. No company, therefore, could tempt the agents of another to transfer their services—and the existing business of the agencies—by an offer to them of a larger remuneration than they were in receipt of from the companies they represented. The local board, with its attendant fees, formed a ready means by which this most salutary regulation could be evaded; and very soon was the method adopted. Companies possessing old connections able to send them business of the most desirable character in large volume, found that these men were being appointed local directors of other companies. In those days men approached one day could be appointed on the one following, the business of their agencies being thereafter transferred to the purchasing company, term by term, until exhausted. The evil grew to such an extent that steps were taken to put a stop to it, resulting in regulations which certainly make it much more difficult for the few unprincipled companies engaged in the traffic to pursue such line of conduct, but which unfortunately do not make it absolutely impossible for them to do so. By mis-applied effort, with patience on the part of both the tempter and the tempted, the same result can still be obtained. I know this too well, as my Company has this year lost the services of two very old and highly-valued connections, and I am told that in the City of Edinburgh alone there are at the present time some twenty legal men, holding ordinary agencies, who are qualifying for local directorships of other companies than those from which they hold present agencies. This means resignation of their present appointments, to be followed, as we know from past experiences, by the transfer of the existing business from those companies which at present enjoy it. Now this is a very deplorable state of affairs and it is little to be wondered at that the name of insurance agent is beginning to stink in the nostrils of decent people, when so few pains are taken by representatives of insurance companies to uphold the honour and dignity of their business. To sum up:

Firstly: we have ordinary agencies offered broadcast over the land, to the fit and to the unfit indiscriminately.

Secondly: we have insurance companies not only paying a discount on business, under the name of agency commission, but being actively engaged in educating the public to this pernicious

practice, in direct opposition to the interests and claims of their legitimate agents.

Thirdly : we have the spectacle of certain companies, in their desire to reap where they have not sown and to gather where they have not strawed, without regard to the very commonest of business ethics, tempting away from their competitors by bribery, the connections and business which had been attracted to those Offices in the past at the cost of much labour, enterprise, and capital.

SUGGESTED REMEDIES.

It is not pleasant work to review the abuses of the system and, unless one can at the same time suggest remedies, it is, perhaps, not advisable to undertake the task. Looking to the 'beneficent combination which exists among insurance companies, to the many wise laws that have resulted therefrom, it seems to me that, if this evil of lust for growth, with the undue competition engendered thereby, were to be faced in a proper spirit, the remedy lies at our hands. Take the luring away of other companies' connections by payment of extra commissions, disguised as fees, to members of local boards. We require one rule instead of the many we have on this subject, the evading of which, by methods correct, certainly, as regards the letter, but at bitter variance with the spirit of existing regulations, lays us open to the gibe of our purely life friends, who say fire men collectively formulate rules, afterwards devoting themselves individually to devising means whereby these same rules may be evaded. There is one rule older than insurance business. It is "Thou shalt not steal." If this were instituted, and compliance therewith rigidly enforced, a few smug-faced gentlemen would be prevented from moving among their fellows as equals in honour, while at every opportunity they endeavour for their own aggrandizement to drive the proverbial coach and four through the spirit, at any rate, of the elaborate rules, which probably they were largely instrumental in instituting.

The remedy for the abuse of discount-paying under the name of commission, is an equally simple one. Let companies transacting business other than fire pass, by means of their various Associations, the same rule which exists among fire companies—that commission is to be allowed only to duly appointed agents. Then let all companies enact, that each agency must have ordinary business from the various sources open to legitimate agents, of an

amount bearing a certain ratio to the business belonging to the agent, or to his firm which may be in the agency, before any commission can be paid on that agent's or firm's own business. This would at once kill discount commission and the scandal of insurance companies competing against their own agents.

The problem of how to put a stop to promiscuous agency appointments, made without regard to the fitness of those appointed, is not so easily solved. The favourite panacea suggested by our friends the brokers and agents able to command a large business, is the imposing upon all agencies and brokerage businesses of an annual license fee of such dimensions as would deter from entering the business, any except those able to introduce by means of connection a substantial amount of business, or those who hoped to attain to the same result by devoting all their energies to the work. The same impost would, of course, speedily clear out existing agents who had not the requisite amount of income from their agencies to allow of payment of the amount. This would, however, strike at the men whom I regard, and I think rightly so, as the backbone of the agency system—the men whose accounts with their offices are small, but who are live men, cultivating to the fullest extent the field which is theirs to work in. Their accounts may be in units or tens of pounds only, but the results are adequate, the utmost anyone could accomplish under the circumstances, while the holders of these agencies leave no stone unturned to keep business of the class they can influence flowing towards their Offices. Unlike the controllers of large incomes, these men cannot attempt to bully the Offices they represent. Should a fire risk have to be declined; should an Office have the temerity to refuse to accept a life which on medical examination turns out to be the possessor of only half of a lung instead of the two a bountiful nature endowed him with; should a manager dare to refuse to make an *ex gratia* payment under a policy which had been allowed to lapse years before the damage claimed for arose, the small agent, should he attempt to threaten, can be promptly and effectively dealt with, without that bugbear of a manager's life, the loss of a large slice of business at one fell swoop, having to be considered. The businesses of these agencies is sound; moral hazard does not flourish with them; and, as "mony pickles mak' a muckle," they are in the aggregate no mean factor in the tale of millions of pounds of insurance premiums. No; these men must not be parted with. The men whose names cumber the pages of our agency registers are the incompetent, the

lazy, the dilettante, who have almost forgotten that they hold agencies and now do nothing whatever to help forward the interests of the Offices they have ceased, in reality if not in name, to represent. I must acknowledge I have no specific rule to suggest for the eradication of this evil. If Offices were to make it obligatory that all agencies must be alive, producing each year a certain amount of new business, or, at any rate, that the holders of these must actively endeavour, on the call of the company's officials, to bring about that result, failing which cancellation of the agencies would follow, our agency registers would soon be reduced from their present unwieldy dimensions, while business, instead of being adversely affected thereby, would be improved by reason of the increased efforts of the working agent. Is it too much to hope, that this small measure of common sense may be looked for? It is sorely needed, and the step would be the first one necessary towards bringing insurance agencies into better repute than they are in the present day.

Gentlemen, I have selected a subject to-night which I do not mind confessing to you I have found an extremely difficult one to handle. With an experience of insurance field work extending over a score of years, I have had full opportunity to study in all details of its working the agency system of our business. While doing so, the conviction has grown upon me year by year that, admirable as the system was and still is, much could be done to improve it. It is, however, much the easier task to criticise than to construct. I have ventured to suggest the enactment of further rules whereby the mad scamper of irresponsible competition which is now taking place in our business might be checked; but, truth to tell, I have little faith in elaborate sets of rules. Binding on honest men, these often prove weapons of offence in the hands of the unscrupulous. Self-interest is the powerful lever which works in all business life for proper practices. Now no one can say it is to the interest of our business that agencies should be held in so little esteem as they are at the present time. By no means is the field of insurance exhausted. In many branches the fringe has barely been touched. Much ground remains to be broken up, and many hands are required for the ploughs which will do the work. Present-day methods, however, are not calculated to attract the proper class of men to the work. We must cleanse the system. We must make agencies for our business as attractive to the men

entering business life as are many of the posts eagerly sought after, while this opening, with its many advantages, is neglected—mainly, I believe, for the reasons we have been considering to-night. In the hands of two men lies the power to bring about this result. The first is the inspector, under which generic name I class all men engaged actively in the outside work of their Offices, whatever their titles may be: the other is the general manager. Let these officials pursue their work, with no abatement of the energy hitherto displayed, but with the firm resolve that no methods will be employed by them, or by those they are responsible for, which tend to lower the standing of the business; and very soon shall we have the Agency System of Insurance Companies restored to a position from which it will be impossible to regard it with any feelings except those of esteem and admiration.

APPENDIX.

- *Following a report of Mr. Chapman's paper, which appeared in the "Post Magazine," an interesting correspondence on the subject ensued in that periodical (pp. 919-955, vol. lxvii., and pp. 3-63, vol. lxviii.). It has been deemed desirable that this should be published along with the official print, and is now accordingly included with the consent of the authors.*
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Sir,—In your current issue you give a verbatim report of Mr. Robert Chapman's excellent paper on "The Agency System of Insurance Companies." This paper contains some outspoken criticism of the evils which obtain in agency organisations at the present day, but I see Mr. Chapman does not favour the licensing of agents, a step which seems to be the only means for putting an end to "own case" agents.

The evil is of long standing—if, indeed, it has not become a chronic one—as the following remarks made by Mr. Francis Bailey in 1810 will show:—

"Many of the public Companies who do not make any return of the profits to the assured allow a *liberal premium*—generally 5 per cent. on the payment made—to any person who will procure an insurance to be effected at their office; and this commission is also allowed to any person who makes the *annual* payment, *provided it be not the party himself!*—an artifice which is easily seen through, but which opens such a door to fraud and imposition that it cannot be too severely reprobated. And, however much it may be sanctioned by the directors in their *public* capacity, we are all aware what their emotions would be if they discovered any of their tradesmen tampering with *their own* servants in this opprobrious manner, since they must well know who would eventually pay for it. I omit to give the names of those Companies who have adopted this nefarious practice, under the hope that such a mean and improper artifice will not be encouraged in future."

Does not the evil go deeper than the agent? If Offices will appoint anyone as Inspector of Agents (often with the intention merely of squeezing such a person's personal connection and then getting rid of him) is it a matter for surprise that Tom, Dick, Harry—and all the rest of them—have agencies, to quote Mr. Chapman, "like greatness, thrust upon them" by such inspectors?

Let me quote an instance which came under my personal notice:—

A short time ago an advertisement appeared in a leading paper as follows:—"To Ironmongers.—Wanted, an Ironmonger with connection amongst Hardware Merchants in — and district; salary and commission, £300. Apply X.Y.Z." Of course there was a shoal of applicants.

"X.Y.Z." was an American Life Office in want of an Ironmonger! And why? Because, knowing nothing of Insurance, he could absorb the "facts" as presented by them to him, and would then be useful as a temporary decoy duck for members of his trade. Having sucked him dry, a similar process would doubtless be adopted with a draper, and then a grocer, and so on. Thus has the position of a Life Insurance Inspector becomes a byword.

Mr. Chapman's paper usefully supplements the one on "Insurance Field Work, its Lights and Shadows," which he read in 1902. You prefaced a reprint of that extremely valuable paper with the remark—"The following paper, given in our issue of 10th January, 1903, was much appreciated at the time, and, weighed as it now is with all the authority of the General Manager of the Caledonian Insurance Company, we make no apology for reprinting it. Every Insurance man will read it with renewed interest, and those who contemplate devoting themselves to outside work may well read and re-read."

Might I venture to suggest that the two papers printed as a booklet would form a most useful book of instruction to outside men?

I am, Sir,

Yours faithfully,

GEO. P. BLIZARD.

Carnarvon Road, Barnet,
10th December, 1906.

Sir,—I have perused with very much interest the paper on "The Agency System of Insurance Companies," read before the Insurance and Actuarial Society of Glasgow, and thanks are due to you for printing the full text in the current number of the "Post Magazine." I wish the paper could be read and discussed in every Insurance Institute.

It is gratifying to know that the subject has been dealt with in such an outspoken manner by a General Manager, even though it is evident that the indictment has been provoked by personal grievances. Not half of the tale has been told, however, and I for one feel that the corporate conscience can only be roused by having the subject thoroughly thrashed out in the various Institutes, and taken up by the Federation.

The writer, in concluding his stirring paper, states that the

power to improve the present methods lies in the hands of two men—"first, the Inspector; the other is the General Manager." May I respectfully suggest that the last should be first?

I am, Sir,

Your obedient servant,

RES. SEC.

Nottingham, 10th Dec., 1906.

Sir,—Insurance men generally must have read with somewhat mixed feelings Mr. Robert Chapman's paper on the above subject, reported in your issue of last week. The dominant feeling, however, must have been one of disgust, not unmingled with anger, that an honourable business like ours should be literally dragged in the mud, owing to a feverish desire for big figures. Mr. Chapman may be heartily congratulated on his courageous and outspoken utterances on the subject, and, looking at the position he holds, they ought to carry weight with them. Of course, it is easy, as he says, to point out defects, but not so easy to find the remedy. If, however, no one was allowed commission on his own business until at least one other proposal had been introduced, it would be a step in the right direction. Mr. Chapman remarks that the very name of Insurance Agent stinks in the nostrils of the public. I would go further and say that almost everyone connected with Insurance is beginning to be looked upon with a certain amount of suspicion, and will presently, I am afraid, have the same unsavoury effect upon the olfactory nerves of people generally. The fact is that the public seem to be unable to discriminate between an agent who may have taken up an agency as a last resource and a highly-trained and experienced official who has devoted his life to the business. Perhaps they are not altogether to be blamed, for the reasons Mr. Chapman gives; but there it is—we are all insurance agents in their eyes. What the end of it all will be is difficult to foresee; but one thing is certain, which is that if a change for the better does not come, and that speedily, men with brains and energy will seek other employment, probably equally lucrative and offering some chance of retaining the respect of their fellow-men. It has been well said that if a man can sell insurance he can sell anything. Mr. Chapman has nailed his colours to the mast, as one cannot doubt, judging from his final remarks, that his Company, for one, will steadily set its face in the direction of much-needed reform. It remains to be seen who will follow.

I am,

Yours truly,

BRANCH MANAGER.

Newcastle, 12th December, 1906.

Sir,—I see you are opening your columns to a discussion which follows the publication of a paper by Mr. Chapman on such an important matter as that of agency reform, and in my private capacity (not as the Secretary of the Association of Insurance Brokers and Agents, or even as a member of that Association), I would like, first, to compliment Mr. Chapman on his courage and the general excellence of his paper, and, secondly, to join issue with him on the question of remedies.

My recent experiences have been a revelation to me of the rapid adaptation of the *bona-fide* Insurance man to the new conditions which obtain as a result of the iniquitous system of agency organisation which exists in the Insurance world generally. The ill-considered practice of the companies with respect to appointing all and sundry persons agents, as Mr. Chapman agrees, has resulted in the agent being held in general contempt by the public. Such being the case, the *bona-fide* Insurance man, "the business getter," has been compelled in self-defence to abandon all ideas of loyalty to any one company and launch himself into more or less active opposition to the interests of the companies generally. It is now the exception and not the rule to find an agent faithfully representing his company. He is nowadays an agent for at least half-a-dozen companies, and makes it a practice to pit one company against the other, with a view to getting more commission for himself or lower premiums for his clients. If he launches himself in the insurance business with the idea of making it his sole means of livelihood, he forthwith calls himself an Insurance Broker, irrespective of the fact that this term should cover larger abilities than he, generally speaking, possesses. His knowledge of the insurance business, so far as the details of fire or marine risk are concerned, is meagre. But these things matter not. He recognises that the name agent is in bad odour, and the term broker savours of ability and power.

This being so—and I think Mr. Chapman and every other manager will agree that the facts are as stated—then the remedy suggested by Mr. Chapman cannot be deemed efficient. He and all other managers must recognise, first of all, that there is no utility in harking back to the early history of insurance, any more than there is in any other phase of life. The day when the agent was loyal and respected, and held a position of honour and trust, has gone for ever. A new order of things has come into being. The ship of progress must be controlled by methods which would have been inconceivable 30 years ago. I agree with Mr. Chapman that "Thou shalt not steal" is a most laudable commandment, but it needs for its enforcement a threat of punishment, either physical or moral. Neither the persuasiveness of Mr. Chapman nor that of any other pioneer will be effective in restraining the vicious propensities of a community educated and driven by circumstances

to recognise thieving as a laudable action. As I have elsewhere said, the first tenet inculcated by the Insurance Companies in their instructions to the new agent is—"Transfers can be effected without loss to the insured": go thou and sneak all the business thou canst from other agents. This mandate is in every agent's instruction book and on every prospectus issued by the fire and casualty offices. That it is not in those issued by life offices is only attributable to the fact that the permanency of the life contract makes it inapplicable.

Now, Mr. Chapman touches the crux of the question from a manager's standpoint in his remarks respecting the insurance broker. By inference, we gather that, according to Mr. Chapman, a broker is a constant threat against the interest of the companies; the broker (the agent with a large number of agencies is actually in the same position) controls a considerable amount of business, and therefore cannot be offended without danger to the company. This is an interesting admission, and one which the public generally ought to be made aware of, inasmuch as we have in the person of the broker that element of protection against the companies which the public require.

Now, if I have made myself clear, it is apparent that the companies themselves are answerable for having brought into existence a veritable Frankenstein. In their unsavoury competitions one with the other, they have multiplied agency upon agency, until to-day we have a large number of men who, if there be any truth in Mr. Chapman's denunciation of the broker, are the avowed enemy of their creators. But is Mr. Chapman's assertion respecting the broker true? I affirm not. I may, without danger of contradiction, assert that there are few insurance men who have had such opportunities of studying the insurance broker as have been mine during the last twelve months; and I unhesitatingly assert that although, generally speaking, the insurance broker, or the agent with a number of agencies, is a man of business who desires to get the best return he can for himself, yet he is, with very few exceptions, a hard-working, honest, well-meaning individual, whose abilities might be cultivated by the companies to their greater advantage.

In considering Mr. Chapman's paper I have been particularly interested in his difficulty with respect to the case of the small agent. He speaks feelingly of agents whose accounts may be in units or tens of pounds only. He says "they are in the aggregate no mean factor in the tale of millions of pounds of insurance premiums." He regards these men as "the backbone of the agency system." Now, there you have, in my opinion, the rock on which Mr. Chapman founders. If the man with a £10 premium income is desirable as an agent, then, surely, the "own-case" agent paying a £10 premium is equally admissible, so far as profit and loss are concerned. It is this

scramble for agents of indifferent capability, this appointment of every person who can bring a proposal in, which has led to the disgraceful state of affairs which in the earlier part of his paper Mr. Chapman so ably arraigns. Further, I would remark the surprising admission that it is the inability of these men to protest which is mainly their recommendation to Mr. Chapman's notice. On the other hand, ability, because of its consequent strength, its sense of dignity, and its realisation of responsibility, is odious in our manager's sight.

Now let me remark the fallacious nature of Mr. Chapman's argument when he comes to his suggested remedy. "Don't tax insurance agents," he says, "because by doing so you crush the small agent," the man with whom we do as we like. Rather, he says, let us "make it obligatory that all agencies must be alive, producing each year a certain amount of new business, &c., failing which, cancelment of the agency will follow." This, he thinks, is good common-sense. But I would ask Mr. Chapman in what way his scheme differs from the suggested agency tax, so far as the cancellation of small agencies is concerned—the small agencies, mark you, he is so anxious to save. If he objects to an insurance agency tax because of the small agent, then I am astonished that he should so far forget his *protégé* as to suggest his removal by so drastic a clause. Let it not be imagined that I am in favour of retaining the small agent, or that I think that the enforcement of such a rule on the part of the Offices would be injurious. I am not discussing that point. I merely wish to drive home the inconsequence of such opposition as this to a suggested scheme of taxation. Personally, I claim a right to my renewals, and shall fight any attempt to base their permanency upon my continued activity.

Now, let me briefly indicate how a graduated Insurance Agency Tax might advantage not only the broker and the agent, but the companies also. The real danger of the companies is competition among themselves: the repeated efforts of one company, for instance, to enlist the assistance of the agents of another company. If Company "A" appoints a certain agent, and, through the instrumentality of a competent inspector, that agency is developed, would it not be desirable if rival companies were held off? This could be attained by a graduated Insurance Agency Tax, the amount of which could be based upon the number of agencies held. An agent of a fire insurance company might be taxed at the rate of, say, five shillings per annum. If he took on a second company, he could be compelled to pay another five shillings; if he took on a third, a further charge could be made. This would tend to limit operations of *bona-fide* agents to certain selected companies, besides tending to shut down those who are absolutely incompetent, and, further, arrest the promiscuous appointment of

"part-timers." Our friend, the agent with a large number of companies, is naturally alarmed at such a suggestion; but if the scale was graduated, so that on the attainment of a certain amount the agent should be entitled to the use of the word "Broker," at a fixed annual charge, which title should permit him to transact business with any company, without further taxation, I think the case would be met. Also, the companies might be compelled to check their greed for new agents by the imposition of a stamp duty on agency appointments.

Mr. Chapman has done good service in his spirited article upon the subject, and any criticism which I make is made in a friendly spirit, with a view to inducing further thought. I quite recognise that companies have just rights and are to be protected against any unfair encroachments; but I would recommend to the managers of insurance companies a consideration of this question—whether by the infliction of a tax many of the existing grievances might not be abolished.

Yours truly,

F. H. HAINES.

Watford, 19th December, 1906.

Sir,—There is, no doubt, much truth in the remarks of "Branch Manager" and others who complain of the disrepute with which all engaged in Insurance business are, in certain circles, apt in these days to be regarded. I do not, however, see that the point is one of so much moment, because I think it is clear that this disesteem (caused almost entirely, probably, by certain industrial life methods) is observable mainly, if not solely, amongst the illiterate and the lower middle classes. Such people, with their necessarily narrow horizon, are quite unable to disassociate the educated official (and it is to be hoped that the standard is not falling) from the unblushing canvasser. But this view does not apply to professional people generally, still less to those who are not in any way connected with business—simply because such people not only are aware of the position in the financial world of the great Insurance Companies, but also by instinct they at once recognise "the gentleman" in whatever capacity they may meet him. The instinct referred to is not found elsewhere—save, perhaps, amongst the peasantry—and, indeed, it might be said that breeding is recognisable only by the well-bred.

But, be that as it may, it is surely certain that the fascinating craft of fire underwriting—demanding as it does such skill, knowledge, thought, and *nous*—deserves on its merits to rank with the highest of the professions, and, such being the case, of what consequence is the opinion of those whose eyes are holden?

Yours truly,

SURVEYOR.

Birmingham, 15th December, 1906.

Sir,—You richly merit the thanks of the community for the publication in your issue of the 8th inst. of the remarkable paper of Mr. Robert Chapman, the general manager of the Caledonian, on the above subject. The paper deserves to be printed in letters of gold and to be distributed among the general and branch managers of the Offices for their daily perusal. For this public championship of the *morale* of the business, Mr. Chapman has won the respect and admiration of his fellow-workers; by his utterances he has proved to be a true friend of both the companies and their agents, and he fearlessly points the finger of warning at those who are recklessly pursuing a course that is bringing the methods of the business into public ridicule and contempt.

Why is it that so large a proportion of branch managers and inspectors, who have had experience of ten years and upwards, confidentially express themselves as having grown to be utterly disgusted with the business they are engaged in, and regret that they have not the opportunity of leaving it for one of a more congenial character? Why is it that in social life an insurance man is so looked down upon as compared with his fellows of equal education and character in other walks of life? Mr. Chapman plainly answers these queries in his admirable paper.

Now that one clear-headed and honest man has not feared to speak the truth in this matter, I hope that others, no less fearless and honest than himself, will follow him, and that the desideratum so dear to the heart of all good insurance men may be hastened by their good work.

Yours truly,

A BRANCH MANAGER OF SIXTEEN YEARS' STANDING.

14th December, 1906.

Sir,—Providing as it does for the punishment of corrupt transactions with "agents," it seems somewhat curious that Mr. Chapman, in his excellent paper on the "Agency System of Insurance Companies," makes no reference to the Prevention of Corruption Act, which comes into force on 1st January next. This statute is exceptionally wide in its scope, infringement of its provisions involving heavy penalties, and it would be interesting and instructive, therefore, to learn, through the medium of your valuable magazine, Mr. Chapman's and other prominent insurance officials' views thereon in relation to insurance agencies.

I am, Sir,

Your obedient servant,

ARBEE.

18th December, 1906.

Sir,—I am very unwilling to enter into this correspondence, and do so only on account of one of your correspondents, Mr.

F. H. Haines, having, in his letter to you of the 19th instant, entirely misrepresented my standpoint. So thoroughly has this been done, it appeared to me as if of set purpose; but after a careful re-perusal of the letter I am willing to take it as one written after a superficial reading of my remarks, coupled with a fixed idea in the writer's mind—which with some amounts almost to monomania—that an insurance manager must be antagonistic to brokers as a class. Mr. Haines states that it can be gathered from my remarks that brokers are, in my opinion, a constant threat against the companies. My paper was one long plea for proper treatment of brokers and legitimate agents alike, and it must be a very curious intellect that can read anything into my remarks suggestive of my regarding brokers in any other light than that in which I view all other proper representatives of companies, or of a desire on my part to apply the thumbcrew to all agents not able to protect themselves.

I am, Sir,

Your obedient servant,

R. CHAPMAN.

Edinburgh, 19 George Street,
26th December, 1906.

Sir,—It is most refreshing for a fieldman to read Mr. Chapman's outspoken expression of opinion on the vexed question of commission. It is unanimously admitted that the rebate evil exists and that it is a growing one, but also that the only cure for it known to exist cannot be applied.

Mr. Chapman says that this evil, as well as others connected with insurance fieldwork, could be removed if the agency system could be cleansed, and he makes the curious assertion that the power to do this lies in the hands of inspectors and general managers. I am sure that there can be no doubt that the managers alone are responsible for the administration of our agency system. If it has been impossible for them in the past to unite in reforming the abuses which Mr. Chapman so graphically describes as tending to the decay of the system, it is obvious that they have the opportunity now, by the coming in force of the Prevention of Corruption Act, to institute reforms which would do away with not only the rebate evil, but all the other abuses discreditable to insurance business.

I am, yours truly,

INSPECTOR.

Edinburgh, 26th December, 1906.

Sir,—Putting aside the respective merits or demerits of (1) commission agents of every class, and (2) all outdoor officials of insurance companies, I cannot ignore the fact that throughout the correspondence, &c., upon such vexed questions in your

journal this year, the latter body as a class have openly endured unnecessary disparagement.

Is it too much to hope that in the new year this will either cease or be more clearly defined, and, failing sufficient mutual respect by the militant party (with whose reasonable demands there is entire sympathy), I trust outdoor officials will contribute their version upon the subject, and, if necessary, organise themselves in the spirit of defence.

I enclose my card, and with your permission sign myself,

Yours, &c.,

SENTINEL.

27th December, 1906.

Sir,—Let me, as one who controls a staff of inspectors and who has had practical experience of outdoor work from the Channel Islands to the Orkney and Shetland Islands, offer "A. Bytton Tyke" my sympathy in his honest struggle to keep his connection together at the usual commission of £1 per cent. and 2½ per cent. Holding, as I do, the opinion that it is not necessary for an inspector to appoint agents to get business, my advice to "A. Bytton Tyke" is that he should make a determined effort to obtain direct business and be independent of amateur agents. Now, Sir, what surprises me is that there has been no response from a single manager offering to assist Mr. Chapman, of the Caledonian Insurance Company, in endeavouring to solve the problem of dealing with agencies. Permit me to say that the remedy lies in their (the managers') own hands, not with insurance brokers. Surely there is a manager plucky enough to tackle this vexatious question and bring the matter before the Life Offices' Association. Might I suggest a remedy, and, I venture to think, a bold one:—

1. Do away with agents—I mean solicitors, bankers, clerks, butchers, bakers, greengrocers, &c., &c.

2. Pay existing agents out on the basis of three years' renewal commission (agencies being held during the pleasure of the directors).

3. Pay no direct commission.

4. Pay commission to, and appoint only, registered insurance brokers and inspectors.

I am of opinion, Sir, that this will tend to cleanse the business and raise those missionaries of civilisation to that standard in which they were held twenty years ago.

Yours faithfully,

NALLA.

London, 21st January, 1907.

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THE MORAL HAZARD IN FIRE INSURANCE.

By H. P. BLUNT.

A Paper read before the Insurance Institute of Newcastle-on-Tyne, 9th December, 1904.

IN its simplest form the element of Moral Hazard in Fire Insurance may be defined as the risk of the Insured wilfully causing a fire; but if it is to be considered to its fullest extent, several other points which contribute to it should be taken into account, such as the culpable or interested carelessness or negligence of the Insured; the character of his employes; in the case of a property owner, the status of his tenants; and the probabilities of a fraudulent claim being based on an accidental fire. Nor can an underwriter afford to neglect altogether the chances of arson being committed by an enemy of his Insured, or of fires arising from the acts—malicious or careless—of persons who may gain unlawful access to the risk.

In trying to judge to what extent Moral Hazard prejudices a risk an Office is compelled to rely largely upon its own resources, because, although by one of the great governing principles of Insurance law the Insured must preserve the utmost good faith towards the Insurer when entering into the contract—whereby, in order to prevent fraud, the duty is imposed upon him of disclosing every fact affecting the hazard—it is self-evident that his motives in desiring protection will not be declared if they are of a nature inimical to the interests of the Insurer, and it therefore becomes of vital importance to obtain satisfactory information regarding the character, business methods, antecedents, and financial position of a proposer before granting him a policy, and it is equally important to endeavour to ascertain as far as the means at command permit that the principle of good faith is not violated so long as the contract endures.

The principle of good faith also demands that a policy-holder, in the event of a fire, must do his best to protect his property from

destruction, or from deterioration; but if he has, from causes to which reference is hereafter made, lost interest in the preservation of the burning property, it is not likely that he will unduly exert himself either to extinguish the fire or protect the salvage.

The question of Moral Hazard would appear to have engaged attention from the earliest known application of Fire Insurance. From Mr. Charles Stewart's paper entitled "Fire Insurance: a Historical Sketch," read before the Insurance and Actuarial Society of Glasgow in 1882, we learn that more than 2500 years ago, in connection with communes which flourished in Assyria and the East, judges, priests, and magistrates were appointed for each town and district, with power to levy contributions from each member of the commune to provide a fund against sudden calamities such as drought and fire. *If the judges were satisfied that the fire was accidental*, they empowered the magistrates to assess the members either in kind or in money, and, in the event of any member being unable through poverty to meet his share of the contribution, the deficiency was made up from the common fund. It is clearly indicated here that the communal authorities safeguarded their funds against fraud by causing judicial inquiries to be made into the origin of fires.

In a law of Flanders promulgated in 1240 there is recited a community of liability, the administration of which also involved fire inquests. It is rendered as follows:—"In whatever house a fire shall have been *secretly* made, the whole place instantly makes good the damage through those whom the guardians select; but if the malefactor can be found out, he is banished for ever, and the damage is made good out of his property; the residue indeed he yields up to the court. Truly he who can exculpate himself from the accusation will be commended by those guardians, but until he can do so he is suspended. All his goods will be in the pleasure of the court, the damage being first restored to him who has the injury, if he has first made complaint—*i.e.*, given due notice."

In Britain the first appearance of Fire Insurance was in connection with the Anglo-Saxon Guilds, wherein the members made fixed periodical payments towards a common fund, to secure each other against loss from "*fire*, water, robbery, or other calamity," and it would seem on reference to the rules of some of the Guilds that *bona fide* claims only were contemplated. The ordinances of a Chesterfield Guild (1218) include the following:—"Help to be given in case of loss by fire, murrain, robbery, or by

any other mishap, so that such loss come not through his own lust, or gluttony, or dice play, or other folly, viz., each brother 2d." The rules of a Lincolnshire Guild contained:—"If the house of any brother or sister is burnt *by mishap*, every brother and sister shall give a halfpenny towards a new house." Indeed, in one of the regulations of a London Guild of the 10th century—the object of which, however, was not indemnity against fire loss, but against loss of stolen cattle and slaves—the plain statement is made that "many men made fraudulent claims," and this in spite of the fact that everyone who wished to be admitted into a Guild was required to be of good reputation and bearing, and if he became a brawler or a thief, or committed other offences, he was punished or turned out of the Guild.

Prior to the formation of Fire Insurance Offices, it was the custom, on the occurrence of a large fire, to make collections throughout the country in aid of the sufferers by means of letters patent called Fire Briefs. These were issued by the Lord Chancellor under the authority of the King in Council to those who furnished proof of loss, accompanied by a recommendation from some nobleman or other person attached to the Court. Presumably this was intended to be a guarantee of the character of the applicant, but the system was attended by gross abuses, and a case is recorded in 1697 of a fire breaking out in an *empty* house in Westminster belonging to one Pemberton, who received £400 from the proceeds of the Brief, "though his houses were insured to their full value, if not much above the worth of them, in two offices." This case led to the passing of an Act for the regulation of collections upon Briefs, the system not being actually abolished, however, until 1828.

In the prosecution of our inquiries we now reach the period of the establishment of Fire Offices, and the following interesting reason for the attachment of a fire mark to a house is indicated in the regulations of the Friendly Society established about 1684, namely:—"To prevent any fraud in getting any policy by indirect means *after* a House is burnt, no House is to be esteemed a Secured House till the mark hath been actually affixed thereon."

About 1704 there was founded "The Lombard House," which was a mutual Fire Insurance scheme grafted upon an institution called the "Charitable Corporation," and, as it was the first Office for the insurance of household goods and trading stock, the regulations for the protection of the Office as set forth in the Deed of

Settlement are of considerable interest, and display an admirable appreciation of the risks to which their enterprise would be exposed:—"Any person paying Two Shillings and Sixpence to the Cashier of the said Corporation shall have a receipt for it, and upon delivering the same to the Committee shall have an order gratis obliging the Corporation to make good *two-third parts of any loss* not exceeding Thirty-seven Pounds Ten shillings, and so in proportion for any greater sum, within seven years.

"Losses not to be admitted till an inventory upon oath of the quantities, qualities, and real values be given in, and the sufferer has sworn he was in no way guilty of or accessory to causing the fire or imbezelling any goods, and that he does not know where any of them are. And has also declared upon oath whether the house whence the goods were lost was brick or timber, and on fire or directly over against the house on fire or within five houses of one of them, *and that the goods are not insured in any other Office.*

"Upon notice of any loss the Secretary of the Corporation shall summon a Court of Committee, where trustees shall be present to receive the said proofs and adjust the payment of the money, and *publish the inventory, with promise of reward to the discoverer of any goods said to be burnt or lost, and also of the occasion of the fire.*

"A general meeting of all who have paid money for insuring shall be held within six days after the said Court of Committee; and if the report of the losses, &c., be approved, there shall be ordered one-eighth part of the money to be paid immediately to the sufferer, and the rest after sixty days; another general meeting first had, *the said proofs again considered, and allowances made for all goods then discovered.*

"The money that is claimed by any sufferer accused guilty of the fire, or imbezelling goods, or having insured elsewhere, shall be detained until accusation proved. Provided accusations made at one Court be proved at the next, otherwise the money shall be paid to the sufferer."

The limitation of the payment to two-thirds of the loss appears to be based upon Marine Insurance practice. From the undernoted clause it would seem that the Office, relying upon the above conditions, dispensed with the inspection of goods proposed for insurance:—"And because most persons are unwilling to have their goods inspected, there is care taken in the said settlement (*i.e.*, the Deed of Settlement) both to find out the true value of the goods burnt or lost, and also to detect insuring with ill designs, which

being the only end to such inspection, it may reasonably be concluded needless."

The operations of the concern, however, were apparently of a very limited nature, and it is only on the establishment of the Sun Fire Office (1709-10) we find the insurance of contents of buildings vigorously taken up, due regard being given to the protection of the Office against fraud, the tenth article of the proposals (or prospectuses) reading:—

"When any sufferer receives his or her claim, 5 per cent. shall be deducted out of it for defraying the charges, and expenses of officers and others employed to make inquiry how and by what means the fire happened, as is usual in other Fire Offices."

And the next article was the famous "Churchwarden Clause," the earliest recorded form of which was:—"Every Sufferer must make out his or her Loss and damage upon Oath before a Judge or Master in Chancery, in the presence of the Clerk of the Company, within 10 days after the fire, and carry that Affidavit to the Minister or Churchwardens of the Parish in which the Fire broke out, and some other eminent Housekeepers in the said Parish, especially such as live near the place where the fire began, but have themselves sustained no damage thereby, and are best acquainted with the person, reputation, and circumstances of the said Sufferer, who shall sign a certificate that they do know or believe nothing to the contrary but that the Sufferer has really and by misfortune lost by fire the sum mentioned in his or her Affidavit, upon producing which to the Company he or she shall receive his or her claim, but if there appears any fraud or perjury in such Sufferer he or she shall be excluded from any right of Interest in these proposals."

The regulations of the Union (1714) stipulated that "Double Insurance made the policy void," and that "earnest money was charged at the rate of 10s. per policy before any survey for insurance was made," showing that the necessity for this safeguard had been recognised; but in the scheme of the Fire Department of the London Assurance, which began operations in 1721, the condition as to other insurances reads:—"To prevent frauds, if any buildings or goods assured with any other company or society, the policy granted by this Corporation is to be null and void, unless such assurance is allowed by indorsement on the policy."

The regulations of the London Assurance also included an Arbitration Clause, as did those of the Fire Department of the Royal Exchange, set on foot in the following year. The latter

Office also embodied the following Reinstatement Clause; but it may be noted in this connection that the announcement of "The Fire Office" in 1680 contained an assertion of the right of reinstatement, and that apparently the Sun, although they made no reference thereto in their proposals, always held they had power to reinstate and exercised it:—".....Such assured..... shall either be paid in money, or the houses, buildings, and goods lost or damaged by fire shall be rebuilt, repaired, or replaced and put into as good a condition as they were in when the fire happened, at the option of the Corporation....."

In 1727 the Sun issued a new set of proposals giving effect to what might, we presume, be styled the modern practice, and two years later they were defendants in the first reported case (*Lynch v. Dalzell*) on a Fire Insurance policy—a trial having an important bearing on the subject of Moral Hazard, as it clearly established that the Fire Insurance contract was purely a personal one, i.e., that the person insured must own the property at the time of the loss. The report of the case in Brown's Reports contains the following:—

"The Society being sensible that such an extensive undertaking might give great opportunities for frauds, took all possible precaution for preventing them, and therefore their policies for insurance were so framed as to be contracts only between the Office and the persons insuring, the loss secured against being thereby restrained and confined to the contracting persons only; and the policies referred to certain printed proposals containing the essential terms and conditions between the insurers and the insured, copies of which proposals were always delivered with the policy."

In the hearing in 1743 of another case bearing on this point, defended by the Hand-in-Hand, Lord Chancellor Hardwicke said he was of opinion that, "from the nature of all insurances, the insurance must cease with the interest of the insured. An insurance implies an interest in the thing insured. If it were otherwise, many ill consequences might follow; men might insure the houses of strangers, and, in hopes of getting the money insured, set their houses on fire."

The Westminster in 1805 issued fresh "Terms and Conditions" showing that the legal decisions recorded had had careful consideration, and also that the contract was assuming a much more precise form; since then the process of evolution has continued, until a century later the conditions were remodelled in their present form.

The foregoing references suffice to show that the Fire Offices were from the outset impressed with the likelihood of fraud, and were prompt to take precautions to defend themselves against evil practices from time to time, as the scope of the business enlarged.

An examination of the material relative to the subject of Moral Hazard placed on record during the nineteenth century shows that this feature continued to cause the most serious concern to the underwriters of the period, very pessimistic views being held by the leading authorities as to the prevalence of wilful fire-raising, particularly during the first sixty or seventy years. In the early part of the period the number of suspicious fires was no doubt largely due to the impoverished and disturbed condition of the mass of the people following the Napoleonic wars, but it has been held that many of the "unknown" fires in the middle of the century which were thought to be wilfully caused were more probably due to accidents arising out of the development of machinery, fresh trade processes, new lighting and heating methods, &c.

The business of Fire Insurance nevertheless progressed by leaps and bounds, the total sum insured in England and Wales, as calculated from the duty returns, increasing from £211,392,300 in 1800 to £956,876,279 in 1860, rising to £1,504,164,000 by 1868, when the duty was repealed.

In 1810 the Corporation of the City of London was petitioned unsuccessfully to take powers to appoint a Coroner to investigate every fire occurring in London.

So many fires occurred in Glasgow in 1825 that the Sheriff of Lanarkshire announced in a circular to the Offices (in which he remarked that he was "rather disposed to think that the great competition among Insurance Offices not only facilitates the effecting of insurance among all ranks and characters, but moreover renders invidious a minute investigation of each particular case") that he proposed every fire should be investigated by himself, or any competent authority, through the medium of the Procurator Fiscal. The beneficial effects of this step were so apparent that the Lord Advocate was approached with a view to like measures being adopted throughout Scotland, who, however, declined to allow the Sheriffs to adopt the course suggested, although he thought the magistrates of the boroughs might do so.

A general reduction in rates in 1825 led to reckless competition, the evil effects of which, in their relation to Moral Hazard, were strongly commented upon by Mr. F. G. Smith, Secretary of the

Scottish Union, in his work, "Practical Remarks on the Present State of Fire Insurance Business," published in 1832. In the preface Mr. Smith remarked that "one of the greatest evils of the present day in this business is the inducement competition holds out to the commission of the crimes of arson, perjury, and fraud for the purpose of defrauding Insurance Companies. . . . The facilities with which claims are nowadays settled, for the sake of popularity (strict inquiry as to the cause of the fire being almost out of the question), holds out an inducement to the dishonest too strong to be resisted, as detection under the circumstances cannot be reasonably anticipated; hence fire after fire without any satisfactory proof of being accidental."

The extent to which agrarian incendiarism prevailed about 1830 caused the Companies to increase the farming rates very considerably, and it then became usual to require information to be furnished by a proposer regarding threats made against himself, and wilful fires in his neighbourhood.

The prospectus of the Equitable Fire Office—founded in 1850 on non-tariff lines, and transferred to the "Unity" ten years later—contained a sentence inferring that the other Offices did not exercise sufficient care in the selection of their customers. It read as follows:—"It is evident that by the exercise of a sound discretion in the selection of risks the honest and careful may, to a great extent, be relieved from the payment of a rate of premiums higher than what is necessary to cover their own risks, but which must necessarily be imposed where less caution is observed, to enable Companies to meet the losses incurred through carelessness or fraud."

Mr. Samuel Brown, a Fellow of the Institute of Actuaries, contributed a highly interesting paper to the *Assurance Magazine* in 1850 on "Fires in London," from which the writer makes the following extracts:—

"The large number of fires which are suspected, and by the indefatigable exertions of Mr. Payne, the Coroner, in recent cases frequently proved, to be "wilfully occasioned," are beginning to assume a most serious aspect. It is very much to be feared that the liberality of the Insurance Companies, forced on, perhaps, by the efforts to maintain a high reputation against a competition equally dangerous to the public and themselves, leads to the prompt settlement of losses in some cases in which, *if a public prosecutor existed*, a criminal would be punished instead of a

sufferer rewarded. Many instances might be cited not merely of doubtful cases, but even of some in which the verdict of a Coroner's jury has declared that the house was wilfully set on fire by, &c.—yet the parties have escaped. . . .

"It would be a curious subject of inquiry, and one on which only the records of Insurance Offices could throw light, what is the average length of time that an insurance endures before a fire takes place, and in cases where it occurs very much below the average time, whether the general tendency to make an insurance below the value of the property is not reversed."

The "County" prepared a special schedule of its farming losses during the first eleven months of 1853, which showed that there had been 128 fires, of which 49 were due to incendiarism and accounted for £5514 out of a total loss of £8820.

The Revised Report on Fire Insurance Duties compiled by Mr. George Coode, and issued in 1863, contained some highly-coloured views regarding the frauds practised on the Fire Offices, of which the following may serve as a specimen:—"All experienced officers of such Societies declare that their necessary premiums might be reduced one-half but for the fraudulent demands they are compelled to comply with. One-half of their losses are unavoidably or innocently caused; the other half are payments to fraudulent or criminal persons who make the loss a certainty to the other contributors for their own gain. The Societies are thus the paid agents for carrying into effect a transaction the whole practical result of which is the certain loss of half the cost of insurance to honest purchasers of policies, and the transformation of that loss into the certain gain of dishonest policy-holders. The transaction is in about equal degrees an assurance of indemnity for innocent loss and a reward for fraud or crime."

Assuming that Mr. Coode correctly stated the views of the Offices, it is as difficult to conceive the state of affairs which caused such assertions to be made as it is to imagine responsible officials of the present day placing the ratio of losses due to fraud at 50 per cent.

The Lord Advocate of Scotland in 1866 directed the Procurator-Fiscals to institute inquiries into fires, and this system is still in operation, the inquiries being held when suspicious circumstances are reported by the police or other authority; but they rarely lead to convictions for wilful fire-raising being obtained, and as the proceedings are private they are not of the practical value they

might be in preventing the commission of this crime were they conducted in public.

The Parliamentary Committee which sat in 1867 on the Protection of Life and Property examined a large number of Fire Office Managers, Surveyors, and Adjusters, and on the second head of the inquiry—the best means of ascertaining the causes and preventing the frequency of fires—their report stated (*inter alia*) that most of the witnesses concurred in the belief that there had been a great increase in the number of fires of late years; that there had been a large proportional increase in the fires whose causes were unknown, as compared with the gross number of fires; and that this increase and the general increase of fires were due very much to incendiarism. It was given in evidence and admitted by gentlemen connected with Insurance Companies that the increase in the number of fires of late years was in some measure to be attributed to the great competition among Insurance Companies for business; to their carelessness in taking risks, as well as in the appointment of agents; to the too ready facility with which they settle claims, some of which they believe to be fraudulent; and to a disinclination in general on the part of the Companies to prosecute. The Committee, in recommending an inquiry into every fire, further stated the evidence showed that wilful fire-raising might be traced to several causes:—(1st) To individual and organised gangs of men, who make a trade of it to defraud Insurance Companies; (2nd) to parties who have been unfortunate in business and who cannot meet the claims made upon them; (3rd) to persons in warehouses, to conceal theft of goods made by them in the warehouses; (4th) to malice. And, finally, they specially recommended that no claim should be settled by any Insurance Company without a certificate from the police, or fire brigade, or officer appointed to conduct the investigation.

Apparently nothing was done to give effect to these recommendations until 1873, when the Chairman of the Committee, Mr. Peter M'Lagan, introduced to Parliament a Bill to make provision for investigation into the causes and circumstances of fires. The measure, however, was not proceeded with.

In 1873 a Committee of the Society of Arts sat to consider "the means of protecting the Metropolis against conflagration," and in their report mention that "it is in evidence that a large proportion of the increase of ordinary fires may be ascribed to incendiarism for insurance money."

In the early 'seventies the Offices apparently had under consideration a proposal for combined action in dealing with suspicious claims which involved the appointment of a solicitor to act for the Association of Insurance Offices, to whom all such cases were to be handed for investigation with a view to legal proceedings being taken if deemed advisable.

Mr. J. M. M'Candlish, in the article on "Insurance" contributed by him to the *Encyclopædia Britannica* (9th Edition, 1880), remarked that "public attention has from time to time been directed to the serious question of how far the crime of arson may be regarded as the consequence of the Insurance system and what can be done to prevent it. There can be no doubt that wilful fire-raising with a view to defraud Insurance Offices is not only a very common offence, but is probably on the increase. Several attempts have been made to legislate on the subject, but hitherto without success, nor is the public feeling sufficiently strong to give the required impulse. Other crimes than arson thrust themselves on public notice, and all men see the necessity for inquiry and detection. This crime, when successful, too often destroys not merely the evidence which would go to prove it, but the very circumstances which would indicate that a crime had been committed. The immediate sufferer, too, is probably some wealthy Insurance Company whose case naturally excites little sympathy. It is seldom prudent and sometimes scarcely safe for the sufferer to insist on exceptional inquiries, and there is a general disposition rather to put up with a loss than to raise disagreeable questions likely to lead to nothing. But as the honest portion of the community pay for all dishonest claims, it may be hoped that a due inquiry into the causes of fires will some day come to be regarded as a matter of grave public interest."

In 1885 the Corporation of London took the initiative in mooted the question of fire inquests, and conferred with the representatives of several Companies, who, however, refused to be specially identified with the matter. Since then recommendations have been made on the subject of inquiries into the causes of fires by the London County Council, Chambers of Commerce, Traders' Associations, the Association of Municipal Corporations, and Coroners' juries—the *Post Magazine* in November and December, 1895, strongly advocated the appointment of fire marshals—but with no other result than the passing of a private Act for the Corporation of the City of London in 1888 empowering the

Coroner to hold inquiries into the causes of fires. By the provisions of the Act, the Commissioner of the City Police, or the Chief Officer of the Metropolitan Fire Brigade, on loss or injury by fire in the City of London being brought to their notice, are to report the same to the Coroner, whose duty it is to consider such reports and to hold an inquest if ordered by the Lord Mayor, the Lord Chief Justice, or one of His Majesty's principal Secretaries of State, or if the Coroner be of opinion that proper cause for inquiry exists. In making such inquiry the Coroner is invested with the same powers as when holding an inquest upon view of a dead body. Commenting on the operation of the Act, the *Post Magazine* in its issue of 3rd January, 1891, remarked:—

“A number of fire inquests have been held by the City Coroner, but the results, so far as they have served to enlighten the Offices or the public, have been practically valueless.”

The following remarks in connection with the increased number of claims are taken from the leading article in the *Post Magazine* of the 16th January, 1892:—

“The increase in the number and extent of claims is also due to the ease with which insurance is now obtained. Persons who a few years ago found difficulty in getting any insurance at all are now able by one means or another to secure policies from the most cautious Offices. And there are many people who, even if they do not contemplate arson or fraud when they effect an insurance, are not slow to put forward the most impudent, bare-faced, and extortionate claims when the opportunity presents itself. Hundreds of claims are settled or compromised annually which are undoubtedly of a fraudulent character; but in the absence of definite proofs, and in order to avoid legal proceedings, Offices make these payments, knowing that if they resist them, however much they may be justified either legally or morally in doing so, the circumstance will be used to their disparagement by their competitors.”

This imperfect abstract of the history of our subject may be completed with a brief reference to arson in its legal aspects. This crime is defined in the “*New English Dictionary*” as “the act of wilfully and maliciously setting fire to another man's house, ship, forest, or similar property, or to one's own, when insured, with intent to defraud the Insurers.” It was punished with death by the Saxons, and remained a capital offence until the consolidation of the laws in 1827 and 1837, when the punishment was reduced

to transportation and imprisonment. The latest legislation on malicious injuries by fire as regards England and Wales is by the Consolidating Act of 1861, by which the crime (with certain exceptions) is punishable with penal servitude for life and minor degrees of imprisonment, with whipping for male offenders under the age of sixteen; the exceptions referred to are arson of His Majesty's ships, arsenals, dockyards, &c., and arson of the works and shipping in the West India Docks, London, and for these offences sentence of death may be pronounced, but the Court may order the judgment to be entered on record, which has the same effect as if the judgment had been duly pronounced and the offender reprieved by the Court.

The offence is one which is subject to frequent fluctuations, but an examination of the Criminal Statistics (England and Wales) shows that the ratio of persons tried to the population has been decreasing on the whole since 1857-59, the first period for which the figures are given in the Blue Book.

The conditions of the modern Fire Insurance contract rest mainly for their authority on the common law, as legislation expressly designed to assist the Companies in securing themselves against the machinations of rogues is of limited extent and practically confined to the Gambling Act (14 Geo. III.), which provides that a policy is null and void where the person for whose use it is made has not an interest in the event, and to the Acts (which do not apply to Scotland and Ireland) relative to the reinstatement of buildings, which state that "to deter and hinder ill-minded persons from wilfully setting their house or houses on fire with a view to gaining to themselves the insurance money" the Insurance Offices were empowered, "upon any grounds of suspicion that the owners, &c., who shall have insured such house, &c., have been guilty of fraud or of wilfully setting their house, &c., on fire," to cause the insurance money to be laid out in rebuilding the property.

As will have been seen, the conditions are general stipulations framed to protect the Insurers against fraud, and in this connection Bunyon (1st Ed.) quotes the following from Lord St. Leonards' remarks in the leading case, *Anderson v. Fitzgerald*:—"The Court, observing how very often Companies of this nature have been subjected to frauds, will carefully guard them against fraud, and will give effect to any part of the contract which has this object. Nay, more, it is from the very advice given in Courts

of Law that the Companies have endeavoured to protect themselves by those stringent provisions which we so usually find in policies of insurance."

The first two conditions embody the duty of the Insured if he is to preserve intact the rule of good faith, while the fourth relates to the personal nature of the contract, which, by insisting on notice of an alteration in interest, furnishes the Insurers with an opportunity of satisfying themselves that the change does not increase the Moral Hazard.

It is important to observe that the condition providing for the forfeiture of all benefit in the event of a fraudulent claim being made is not supported by the common law, under which, although the sum fraudulently claimed could not be recovered, there is no bar to the title to the correct amount of loss. Nor would an Office be legally entitled to enter into and for a reasonable time remain in possession of premises or property damaged by fire if it did not reserve the right of entry in its contract, as the right does not exist under the common law, and in the absence of such a clause a fraudulent claimant could treat the Company's Officers and Assessors as trespassers.

The reinstatement clause extends to goods the option granted by the Legislature as regards buildings.

The regulation requiring notice to be given of insurances effected elsewhere under pain of forfeiture of benefit was a salutary one, the disappearance of which from the modern contract is to be regretted.

The evils resulting from reckless competition and its corollary, weakness in dealing with unsatisfactory claims, are perhaps not experienced in modern practice so acutely as in 1832, when the subject was so strongly commented upon by Mr. F. G. Smith; but there can be no doubt that under pressure of competition the standard normally maintained is apt to be occasionally set aside, with the result that facilities are afforded for the insurance of people of doubtful honesty, and naturally in such circumstances the chances of fraudulent or inflated claims being made are correspondingly increased.

The origin of many fires is due to carelessness so gross as to be indistinguishable from criminal negligence, and in judging the quality of a risk it is essential that it should be ascertained whether the applicant is of prudent, watchful, and careful habits in the management of his business, as this is a factor which, on

the one hand, may elevate a risk, somewhat under average in its physical aspects, to an acceptable level, or, on the other, hopelessly prejudice a hazard quite desirable in other respects. On the principle of "like master, like man," it is perhaps a truism to say that an employer will receive from his servants a standard of conduct in these matters in consonance with his own views.

The Parliamentary Committee already referred to recommended that if investigation proved a fire to have been caused by culpable carelessness the person implicated should be deemed guilty of a punishable offence.

Depression in trade, whether affecting the prosperity of the country as a whole or whether limited to particular classes of industry, is felt to be a prolific cause of unsatisfactory losses. Strength of character varies largely according to the pressure of circumstances, and as crimes, *especially crimes against property*, increase in hard times, so the number of those who look to the Insurance Companies to assist them out of their difficulties may also be expected to rise in periods of depression. During such times the spending power of the public is greatly reduced, and some unscrupulous traders, finding themselves in pecuniary difficulties, are tempted to realise their stocks at the expense of Insurers, while others who may be trustworthy enough in normal times become indifferent to the maintenance of the ordinary safeguards for prevention of fires, and view one more or less as a blessing in disguise, according to the extent to which their goods are destroyed by it.

A fire induced through deliberate neglect of methods which would normally be maintained to ensure safety must be looked upon as an offence only differing in degree from the direct commission of arson, although it is probable many such cases appear in the records amongst those due to ascertained causes.

Another source of losses due to Moral Hazard is to be found in trade fluctuations. Traders carrying heavy stocks of certain lines of goods may find them rendered practically unsaleable by some sudden change of fashion, by the death of some high personage, or by a mild winter or wet summer. Current stocks, both of manufacturers or tradesmen, may be greatly depreciated by home or foreign productions—of lower quality or made by cheaper processes or labour—being placed on the market. In instances of this kind there is a probability of incendiary fires occurring, and it may also be assumed that in the event of a fire happening through accident

the person concerned, if insured, will probably view the destruction of his stock with equanimity, and turn with satisfaction to the preparation of his claim.

Stress of trade competition is also likely to lead to fraudulent claims. A man enjoying a steady, well-established business may find his profits materially reduced or extinguished altogether by the transfer of custom to a new co-operative store, or to a branch shop of some large and aggressive concern; or if he happens to have embarked his capital in some special line, his business may be ruined through a war of prices between manufacturers.

Want of capital, lack of business experience, inability to gauge the public taste, antiquated methods, "dumping," dishonest employes, position of premises, diversion of traffic following town improvements, are all points to be taken into consideration by that Admirable Crichton, the successful fire underwriter; in fact, everything which tends to render a business unprofitable introduces the element of Moral Hazard in a degree varying only according to the strength of mind of the policy-holder.

In over-insurance is to be found another and most important phase of the subject, and it is of the utmost consequence to the Offices to endeavour to keep this feature within the narrowest possible limits. A community of interest exists between the trader who owns a profitable business and his Insurer—the interests of both are injured by a fire—and this bond, which is the surest safeguard against loss, naturally diminishes in strength directly the productive nature of the property becomes impaired, and if to the desire of realising at the expense of the Offices is added the temptation of attempting to make a substantial profit by the medium of an over-insurance, the risk of the intentional destruction of the property is greatly increased. An effort to secure such insurance on a trade risk may, as a rule, at once be looked upon as evidence of fraudulent intent. Many people, however, especially householders, are prone to appraise their possessions at more than market value, and it is well in such cases not to place too much stress upon the feature, if the good faith of the proposer is quite satisfactory in other respects, and the over-valuation is not really serious. It should not be overlooked that even when care is taken to grant insurance equal to, or even less than, the value at risk, removal of goods, or depreciation from any cause, leaves the Insured in possession of a policy for a greater sum than he would stand to lose by a fire.

It is interesting to note that in the three Hansa towns, and in Alsace-Lorraine, a check is imposed on any attempt to procure over-insurance in respect of buildings by the proposer being required to get an independent estimate of the saleable value of the property from a builder or architect, and the sum proposed for insurance must be initialled by the police.

While it is not considered within the scope of this paper to stigmatise any nationality or community, there can be no doubt the interests of the Offices demand that the strictest investigation of the character of an applicant for insurance should be made if there is reason to suppose he is not of our own nationality, and that in such cases the process of selection should be of the most stringent nature. Little or no reliable information can be obtained as to the antecedents of those who have not been long resident in the United Kingdom, and even when the matter of good faith stands the ordinary tests it should not be forgotten that foreign business habits, manner of thought, and Insurance practice may differ so much from our own as to materially obstruct the amicable and speedy settlement of a claim. As regards the low-class alien population so much in evidence nowadays in our crowded centres, the rigid exclusion of these from their books is held by all first-class Offices to be a duty owing not only to their shareholders but also to the State, seeing that a policy in such hands is more than likely to be an irresistible incentive to crime.

Valued policies have hitherto been of rare occurrence in Insurance practice in the United Kingdom, but in view of the frequent attempts which have been made of late to induce the Offices to enter into contracts of this kind, the greatly-increased temptation to fraud created by the issue of such policies may be noticed. Experience in America, where the system is found in operation in two or three States, shows that the consequences have been a great impulse to fraudulent practices, which can be readily understood when it is borne in mind that in policies of this description the amount payable for destroyed goods is arbitrarily fixed against the Insurer regardless of reduction in value through market fluctuations, depreciation, &c.

In connection with farming insurances, the carelessness of tramps seeking shelter in the buildings or about the stacks should be looked upon as part of the Moral Hazard, and incendiary fires from motives of revenge, &c., are likely to be more frequent, the chances of detection being less than in a town, owing to the accessibility of the property insured.

The exclusion of loss caused by spontaneous combustion from the scope of the Fire Insurance contract imposes a severe strain upon the honesty of a farmer; some will prefer to see a stack, fired from this cause, consumed entirely, thus obliterating all internal evidence of the origin of the fire, rather than endeavour to preserve any portion of it as proof that they have no claim. If such a fire occurs in a crowded stackyard any lack of zeal on the part of the farmer in trying to put it out of course adds to the danger of the whole or greater portion of the produce being destroyed, with a consequent heavy loss to the Company.

The fact that the Offices pay for damage caused by lightning sometimes offers dishonest men opportunities of imposing upon the Companies, as not infrequently claims have been experienced for live stock alleged to have been killed by lightning whereas death has been really due to natural causes, the speedy removal and destruction of the carcase rendering it difficult, if not impossible, to detect the fraud.

In many of the large towns there are certain trades which have an unenviable notoriety on account of the general low moral tone of the principals or their workpeople, who are frequently of alien origin; and if a number of such risks are found in a congested district the whole area may be thereby prejudiced from an Insurance point of view.

In considering how the feature of Moral Hazard should be dealt with in our ordinary practice, it may be asked why should not this hazard be deliberately passed in individual cases where it is known or suspected to be present as an addition to the physical risks accepted by the Insurer, and be provided for by the imposition of an extra premium. On the score of expediency alone such a method would not pay, as those who contemplate arson naturally select the most favourable time and circumstances with a view to a total loss; but the matter calls for consideration on higher ground than that of mere expediency. The acceptance of business known to be tainted with Moral Hazard—whether rated up or not—would lead to the encouragement of crime, and cause the Insurance Companies to become, instead of a public benefit and safeguard, a grave danger to the common weal; but Moral Hazard, despite all precautions, cannot be prevented from affecting the loss ratio, and, although it must therefore be taken into account in the adjustment of the general rates of premium required to provide a satisfactory margin of profit on selected

business, yet the only proper way of dealing with the matter in individual instances is to refuse protection to anyone on whom the slightest suspicion rests, and in all cases to take the benefit of the doubt.

Passing now to the discussion of the means by which Moral Hazard may be detected and reduced, it will be found that this feature rarely presents itself in a marked degree in the case of large high-class manufacturing concerns in the hands of limited companies or firms of known reputation. Ample information will usually be on record or be readily obtained as to the character and standing of the directors, partners, and managing officials; whether the undertaking is financially sound and making a satisfactory trading profit, and whether due provision is made for depreciation of buildings and plant. Information should also be obtained as to the relations existing between the management and its workpeople.

It will be the duty of the surveyor to show whether the risk bears internal evidence of prosperity or otherwise, by reporting fully whether it is under strict and careful management; whether the buildings are well adapted for the trade carried on and maintained in good repair; whether the machinery is well cared for and modern, or out-of date; and as to the history of the risk as regards fires and their causes. He should also record his impression whether the premises are fully or over-insured, and any other information he may be able to glean in the course of his survey bearing on the question. If the risk is placed on the books, reinspections, as opportunities offer, should be made to ascertain whether any deterioration on the points mentioned is taking place.

When dealing with manufacturing and other risks owned by the smaller limited companies, syndicates, or private firms, it is likely that in many cases not much definite information as to the general trustworthiness of the principals will be in the possession of the Office, and it will be necessary to rely largely on the particulars submitted by the agent, supplementing these, if any doubt appears to exist, by special inquiries. The surveyor will also furnish his quota of information on the lines already indicated.

The hazard of incendiarism is greater in risks where the buildings are crowded or largely of timber construction, the chances of a fire involving the whole or greater part being thereby increased, and among features which make for immunity from

wilful fires may be mentioned a well organised and equipped town fire brigade, or the maintenance at the works of good extinguishing appliances; where these exist an evil-disposed person will hesitate about starting a fire, knowing that the probability of rapid extinction lessens his chance of escaping detection. The system of profit-sharing or bonus-giving now in vogue at some works not only induces a greater output from the men, but, by identifying their interests with their employers', also tends to reduce the risk of arson. It may be remarked, however, that fires presenting unsatisfactory features have occurred in factories operated by the workers themselves on mutual principles.

A material point in manufacturing risks—large and small—is the situation of the premises, as, if the enterprise is located in a district far removed from the recognised centre of the particular trade, it is difficult to command labour and raw materials on equal terms with competitors.

Risks fitted with automatic sprinklers or the recently approved systems of automatic fire alarms may be thought, from the mere fact that such provision for fire extinction has been made, to be unprejudiced by Moral Hazard, but this is scarcely the case, as the installations in some instances may have been made to secure the usual discount, with but little regard to their subsequent maintenance in an efficient state; hence the necessity for periodical inspection.

In the case of large distributing concerns having a number of branch shops conducted, in the majority of cases, by a manager with one or two assistants, we have to contend with the important additional feature of the likelihood of fires being deliberately caused by dishonest branch managers to conceal defalcations. It may be assumed that the Insured will have satisfied themselves in regard to the antecedents and general trustworthiness of their managers as a body, but the point for the consideration of the Offices is the possible deterioration of character in individual cases from such causes as indulgence in speculation or betting, with a prospect of stocks being tampered with to provide funds for attempts to retrieve losses. The point is one of some moment, as a fire in such circumstances will naturally be contrived with a view to the total destruction of the stock so as to efface all evidence of fraudulent practices, the Office being then placed in the unfortunate position of having to pay a claim based on the stock books kept at headquarters. It must be admitted that it is

very difficult to detect the existence of this element of hazard, practically the only means of gaining information being the Trade Protection Societies, whose local agents will usually be able to supply particulars as to habits and credit.

Railway, dock, and other public warehouses may be looked upon as substantially free from any degree of Moral Hazard which can be controlled by the Companies. Some danger may be apprehended from the negligence of the employes, or a wish to conceal theft of goods, but there seems to be no practical way of dealing with this except by the surveyor, if the risk is inspected at all, making inquiry on the point. Severe losses have been sustained through incendiary fires in risks of this class, notably the series in Hull in 1884.

Coming now to medium-sized and small shop risks in good districts where the business is usually under the personal care of the proprietor, or carried on by his family, danger from the dishonesty of the assistants is reduced to small proportions, and attention must be centred mainly on the Insured himself and his family, if assisting in the shop, and here the agent is the principal safeguard of the Office. Care should be taken to obtain straightforward replies to the various questions on the proposal form, both from the agent and the proposer. When most of the queries are clearly answered, ticks or dashes, for instance, are not very satisfactory on those very material points—"Have you ever had a fire or been refused by any Company?" If the agent reports that his acquaintance with the applicant is only slight, or that he has been recommended by a friend, further information is desirable, more especially if the proposer is a newcomer in the district. Careful inquiry should be made regarding his antecedents, and if he has been trading in some other part of the country the local branch will usually be able to gather some particulars concerning him. When the proposer is just starting business on his own account, his chances of building up a profitable connection depend greatly on the extent of his capital and his previous experience in trade. A novice trying to found a new business may, through lack of cash, have to obtain his stock mainly on credit, and, being compelled to pay heavily for such accommodation, runs a great risk of being soon forced to the wall by pressure of competition; or if he is beginning by taking over another shop, want of experience may lead to his being saddled with a decaying business or one "rushed up" for the purpose of sale to an unsuspecting purchaser, and so

to an early failure ; or even if the business is a genuine, well-established one, his inexperience will possibly minimise his prospects of maintaining its productiveness. It is essential, therefore, that full information should be elicited on these points.

A more general adoption of the rule of inspecting all shop risks is strongly advocated ; it is well worth the additional expense and trouble. The surveyor's trained eye often detects evidence of stagnant or declining trade or careless management ; he will also be able to impart valuable details regarding the locality in which the risk is situated, and his views as to the relation between the value at risk and the sum proposed will to some extent check the agent's statement in the matter, although too much reliance should not be placed on this detail, inasmuch as the surveyor—perhaps one of junior standing—cannot be expected to form, in the course of a rapid inspection, more than a rough opinion of the value of the stock—a close estimate can only be made by a practical man, after examination of the shelves, boxes, and packages, etc.—and in any case, if a policy-holder is bent upon having a fire, under-insurance will not deter him. In fact, he may purposely under-insure to lull suspicion, as by the removal of goods, or omission to replenish stocks reduced by sales, he may be over-insured at the time of the fire.

Proposals on contents of small shops in low-class or slum localities, *i.e.*, districts inhabited by people below the level of the respectable artisan class, demand most cautious treatment. The stocks are necessarily of a very mixed, cheap character, the general standard of honesty usually below the average, and the information supplied by the agent is often meagre and not very reliable, especially if he himself is of the industrial class. Moreover, in such neighbourhoods the Office will come in contact with ignorant, uneducated persons, imbued with exaggerated ideas as to the benefits conferred by an Insurance policy in case of fire, the usual view being that the full sum insured should be paid, even if the goods destroyed are worth less, with the result that the settlement of claims is often difficult and vexatious.

While proposals on furniture in private houses do not call for the close scrutiny given to other classes of risks (although the view often expressed that suspicious fires very rarely happen in these risks is not altogether borne out by the facts), it will be found an advantage to require an applicant to state whether he has been declined by an Office or had a fire, and if so, to furnish particulars ;

also to ascertain whether the agent can of his own knowledge recommend the proposer, and is satisfied that the sum proposed is not in excess of the value. If the proposer is practically unknown to the agent, some inquiry regarding his antecedents is advisable, to make sure he has no connection with those people who, using various *aliases*, travel about the country raising wilful fires in order to swindle the Companies. Domestic servants sometimes start a fire through spite, but such fires are, as a rule, quickly discovered and extinguished.

In underwriting farming risks, the usual information regarding the character of the proposer should be supplemented by the agent with some particulars of any recent incendiary fires in the district, as some indication of the feeling of the labourers towards their employers. It is also important to know the situation of the stacks—whether they are in fields or in a stackyard near the main road, and so likely to be a harbourage for tramps; whether in populous localities, in which case danger is to be apprehended from gamblers and other undesirable characters resorting to their vicinity. An old-fashioned safeguard against malicious farm fires was the affixing of “fire marks” to the buildings, and it is perhaps to be regretted that this has fallen into disuse, as a man is not likely to commit a felony from motives of spite or revenge if he appreciates that the result of his crime will be a loss to an Insurance Company and not to his enemy.

With regard to building insurances generally, the opinion of the agent should be taken as to the respectability of the tenants if the premises are occupied for trade purposes, and the surveyor should also comment on the point. Much caution is needed in the treatment of unoccupied or silent trade premises; strict inquiry should be made regarding the proposer, and the circumstances in which the risk has become silent—whether work has been stopped through depression in trade, and, if so, whether the buildings are being kept in good condition and well watched—or whether the stoppage is due to the decay of the industry in the district, and whether the buildings can be readily adapted to some other manufacture; if they cannot, it is probable they will be allowed to fall into disrepair, and their destruction by fire will not be unwelcome to the Insured. Old, dilapidated structures, habitations condemned by health authorities, or buildings on sites required for new streets or other town improvements, should be avoided, the value of the fabric in such cases being practically that of old material only.

When an agent forwards another Company's policy to be transferred to his account, in all probability the transfer is due to his personal influence with the proposer, but it is scarcely safe to take this for granted without comment, as inquiry might show that the other Office considers the client undesirable. It cannot be overlooked that if a transaction of this kind is passed unquestioned, a loophole is provided for a suspected person to secure fresh insurance without furnishing any of the usual particulars. Nor will a cautious underwriter fail to weigh any knowledge he may have of the methods of the other Company; if its procedure, in his opinion, is not so strict as his own, the transfer offered may originally have been accepted by it on but scanty information.

Proposals from people trading under "fancy" names—often descriptive of the business carried on—should be dealt with very circumspectly; such names are no doubt mainly intended to attract the public, but they, of course, conceal the identity of the principals, who may in some instances be found to be persons of bad credit or alien origin. The surveyor is frequently able to form a conclusive opinion after conversing with such applicants, and in those cases also where an enterprising alien finds his interests are better served by assuming a name less striking than his own.

When instructions for an insurance are received direct from a stranger over the Office counter, the clerk in attendance should take special pains to obtain such information in the shape of references, &c., as will enable the Office, in the absence of the usual agent's advices, to satisfy itself that the proposal is desirable, and he should also record his own impressions of the proposer.

In view of the less stringent methods employed in dealing with household goods insurances, it is advisable to examine more closely the trustworthiness of an Insured who, when starting in business on his own account, proposes to add to his furniture policy sums on the contents of his trade premises.

If an exposure hazard exists, some attention should be given to the reputation borne by the tenants in the surrounding risks.

Up to this point attention has been directed principally to the consideration of the Moral Hazard in its relation to new business, but the system for its reduction will not be complete unless provision is made for the application of checks on proposed transfers of interest, and on renewal business.

An application to transfer the interest in an existing policy by endorsement is a proposal to enter into a fresh contract, and ought to be treated accordingly—a point which cannot be impressed too strongly on endorsement clerks. The appropriate form of proposal should be filled up by the applicant and the agent, the Office records searched, and, if considered necessary, a re-survey made. It often happens, of course, that a new proprietor of a business is unknown to the agent; the former owner, however, will, as a rule, readily furnish any information in his power as to antecedents, &c., and (assuming that he himself is still deemed trustworthy) his advices will usually be sufficient to enable the Office to form a correct opinion.

When the prosperity of a place is dependent on some large factory or colliery, stoppage of the enterprise or dearth of orders affects the whole population, and as the general Moral Hazard thereby becomes more severe, all the commitments on trade risks in the place should be passed under review before renewal.

In endeavouring to weed out clients who are no longer desirable, an Office of necessity must rely to a great extent on the particulars furnished by its officials and agents. A most useful supplementary source of information which may be mentioned in this connection is the inquiry departments of the various Trade Protection Societies and their publications.

Close observation of the course of trade is indispensable; in the event of a general depression, methods adopted for the exclusion of undesirable insurances being more stringently applied, and special care being devoted to those classes of industry which through lack of capital, &c., are soon reduced to a critical condition.

An application to increase a sum insured may indicate an attempt to over-insure, while a request for reduction may mean that the business is a decaying one.

The reputation of the agent for integrity, care, intelligence, and appreciation of the requirements of his Company needs to be taken into account in estimating the reliability of his advices. A reliable agent is one of the mainstays of his Office, as from his local knowledge he is well able to judge to what degree Moral Hazard presents itself in any individual case. On the other hand, an unscrupulous agent, who places the pocketing of his commission above all other considerations, may withhold unfavourable details or gloss over doubtful points, and the lax or ignorant agent is apt unintentionally to mislead by recommending people of whom

he knows really little or nothing, forgetting the caution conveyed on the question of character in his instructions book. Lack of appreciation of the Office requirements is a common source of trouble. For instance, it is scarcely sufficient for an agent to certify a man's respectability on the ground that the landlord is satisfied with his tenant because he pays his rent promptly. He will take care to do that if his object in insuring is to swindle the Company; and if the building and rent are insured, the chance of loss to the landlord is small compared to the risk run by the Insurer.

In case of firms conducting agencies in conjunction with their other business, some danger exists of doubtful proposals—"signed" with the firm's rubber stamp—being put forward by their employes.

It also happens at times that when an agent represents several Offices, a case declined by one is sent—possibly without a form of proposal—to another possessing the reputation of being less particular in the selection of its clients.

A zealous agent occasionally refuses individuals known to him as dishonest, without acquainting the Office. This should be discouraged, as the case might be accepted through another and less scrupulous agent in the absence of any previous records.

The financial position of the agent, according to his walk in life, has a direct bearing on the quality of his business, and the local knowledge of the Office on this point may be seconded by reference to the trade journals already mentioned.

Much important intelligence is acquired by local representatives in their intercourse with the agents and the Insured; observant surveyors in passing premises previously inspected may be struck with an air of neglect or other features denoting deterioration in the circumstances of the proprietor. Such information, after confirmation if necessary, should be placed on record. Subordinate officials may show their zeal by communicating items of news affecting policy-holders to their principals, and also by a careful and conscientious discharge of their duties in the examination of proposals for doubtful replies and foreign names, and comparison of them with the Office records.

The spirit in which an Insured approaches the adjustment of a claim frequently enables the Company to form an accurate estimate of his character. Many claims are more or less exaggerated, either intentionally with a view of making money

out of the Office; or from a mistaken conviction that all claims are settled by bargaining, and that consequently too much should be asked at the outset; or from a misapprehension of the nature of the Insurance contract.

Having regard to the increasing tendency of the Insured to claim for comparatively trivial damage by fire, it would appear to be beneficial to the Companies, and instructive to the Insured, to subject all small losses to systematic official examination with a view to their adjustment on correct lines.

In allowing gratuities to an Insured's employes for assistance rendered in putting out a fire, care should be taken not to make such grants on too generous a scale, lest the recipients be tempted to cause another fire. The payment by some brigade authorities of an allowance for the first intimation of a fire is an objectionable feature; as the result of "fire-raising" to secure such rewards the Offices have sustained severe losses and several persons have been convicted.

In offering some few observations on the strengthening of current methods, it is suggested that, in place of the present custom of interchange of information—whether by direct application to the Office possessing it, or by anonymous circulation as is in vogue in some towns—some arrangement might be made for pooling the particulars gathered by each Company for the benefit of all sharing in the working expenses of the system, the cost of which compared with the advantages gained would not be heavy. Possibly the scheme suggested might be worked by the establishment of bureaux in the larger Insurance centres in affiliation with the Trade Protection Societies, where all the information obtained by the various Offices by special inquiry or in the settlement of losses could be collected and furnished, under proper precautions, to the Companies when called for; the co-operation of the Societies referred to should also be sought with a view to their inquiries, when made for an Office, being adapted to Insurance requirements. The ideal system would, of course, be one which would ensure a suspicious character being declined wherever he might present himself, and the writer ventures to contemplate, in the future development of Insurance practice, the practical solution of the problem of the reduction of Moral Hazard being eventually found by its inclusion in the scope of the functions of the Fire Offices' Committee. The formation of a central bureau working in conjunction with the suggested local ones, the whole being in the

control of the Committee, might be deemed feasible, and it is needless to enlarge upon the advantages such a scheme would offer in the dissemination of valuable information, which might include personal descriptions—and possibly photographs—for purposes of identification of known “fire-raisers.”

Any relaxation of regulations in the stress of competition is likely to lead to the insurance of unknown or doubtful people, and is much to be deprecated. The completion of a proposal form in certain classes of risks should be rigidly insisted upon, and the practice occasionally adopted by some agents of signing the forms for the proposers discouraged, especially in the case of trade risks. The details communicated on the proposal should be declared to be part of the basis of the contract, and the signature of the proposer deemed as essential as it is in the case of an application for Life Assurance—an Office ought not to expose itself to the risk of an Insured, in the event of a fire, repudiating the statements in his proposal on the ground that they were made without his knowledge or consent. There is considerable variety in the questions relative to Moral Hazard which proposers and agents are asked to answer, and it would be an advantage if the combined Offices could agree to standardise all forms of proposal, but more particularly those for shop and farming insurances.

As regards household furniture proposals, wider recognition is desirable of the fact that it is scarcely prudent to pass these without comment when they are received with no information as to respectability, &c.

The question of making provision for judicial inquiry into the origin of fires has, as indicated in the earlier portion of this paper, been the subject of considerable investigation in this country from time to time, but without tangible result beyond the instructions given by the Lord Advocate of Scotland in 1866 to the Procurator-Fiscals of counties to institute inquiries into all fires, and the private Act obtained in 1888 by the City of London Corporation. It is difficult to understand why, in view of the general consensus of opinion that it is very desirable such investigations should be made, Great Britain should still lag behind the Continent, the United States, and the Australian Colonies, where the effect has been to reduce the number of fires. Opinions differ as to the most suitable functionary to take up the work if and when the Legislature grants the necessary powers, but, while the assignment of the duties to the Coroners has been favoured by

some authorities, the general view seems to be that the matter would be dealt with more satisfactorily by the Board of Trade. A stumbling-block in the way of progress is the expense of conducting the investigations. The necessary funds should, of course, be provided by the community, and the difficulty should not be insuperable seeing that it is anticipated the results would be not only that crimes would be detected, but that they would also be prevented, the knowledge that inquiry (if public) would follow the occurrence of a fire being bound to have a deterrent effect, with a consequent reduction in the loss to the nation through fire waste, which would be reflected in a modification of the cost price of insurance to the public.

As previously mentioned, the extension of the survey system to include all shop risks, and official inspection of all small losses, are both matters worthy of consideration.

It is recognised that much of the matter included in this paper will necessarily be trite to experienced officials, but in touching upon various phases of the subject the writer has been actuated by a desire to stimulate those younger men who are studying Fire Insurance in all its aspects to exercise their powers of observation in the performance of their duties. Much valuable knowledge regarding the pressure of competition in various trades may be gained by a careful perusal of the reports on the state of trade and accounts of bankruptcy proceedings, &c., appearing in the daily newspapers.

As "crime is the exception to the general morality of a country," and is especially so in these times when the progress in the moral and social conditions of the people as compared with a century ago is so marked, those who apply for insurance with ulterior motives are comparatively few, and it may be concluded that if unremitting attention is given to the question of Moral Hazard, and a stringent selection of customers practised, the Companies will not be affected by the feature to any abnormal extent, the danger mainly to be apprehended being that of fraudulent or inflated claims following accidental fires, and in such cases the services of an Assessor of extensive local knowledge are of great value.

Although the necessity of refusing protection is obvious in all cases where a doubt as to the *bona-fides* of the proposer exists, caution should not be permitted to lapse into timidity, nor should action be taken on opinions hastily formed on imperfect informa-

tion. As Fire Insurance is inseparably bound up with the system of credit on which the commerce of the country is based, rejection by a first-class Office is a serious matter for a trader employing all his capital in his business; other Companies generally follow the lead given, the result being that he must be content with the protection of an Office possessing small funds or remain uninsured, with the probability of his credit being withdrawn should the fact come to the knowledge of his creditors. Banks are scarcely likely to grant an advance against the goods of a man who cannot obtain insurance. In America insurance is considered to be so essential to the granting of credit that it is becoming the custom for manufacturers and wholesale firms to require information as to the quality and amount of the insurance held by their customers, and steps are taken to ascertain that the policies are kept in force.

In conclusion, the attention of those wishing to examine the question of Moral Hazard more closely is directed to the information contained in Walford's "Cyclopædia," Relton's "Fire Insurance Companies," Moore's "Fire Insurance and How to Build," Griswold's "Fire Underwriter's Text-Book," Bunyon's and Porter's legal works, and the Reports of the various Institutes to which free reference has been made in the preparation of this paper.

CLOTHING FACTORIES.

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*A Paper read before the Insurance Institute of Yorkshire,
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THE wholesale manufacture of clothing is a comparatively new industry. The days when clothing was very much dearer than it is now, and clothes were handed down from father to son, are within the memory of many men now living. Not more than fifty years ago practically all men's clothes were made by tailors, bespoke or to measure; now millions of suits, overcoats, and other garments are made annually to stock patterns, and sold at cheaper prices than were before ever thought of. These are made in factories employing large numbers of hands, and numerous up-to-date power-worked machines and labour-saving appliances.

Two principal factors have contributed to the enormous development of this industry: these are the cheapening of cloth, and the invention and continual improvement of the sewing machine. The means by which the remarkable cheapening of cloth has been brought about have been explained to us in former papers read before our Institute, and particularly in the excellent paper by our respected President on the Waste Products of Woollen and Worsted Mills. Here we heard how, of many materials formerly treated as waste and thrown away as valueless, almost every atom is worked up and made to serve some useful purpose in the manufacture of cheap cloth. On this account, and by reason of the many improvements in machinery, tweed, serges, and other cloths of superior appearance and finish are now produced and sold at a small fraction of the price per yard of the cloths manufactured by our grandfathers.

The sewing machine is, perhaps, of all mechanical contrivances invented to take the place of human labour, the most potent factor in promoting the well-being and happiness of mankind all over the world. Probably owing to our familiarity with the sewing

machine in the home, we have not been accustomed to look upon this as one of the great inventions of modern times, but in its evolution there has perhaps been expended more laborious effort and ingenuity than in that of any other machine. The application of machinery to the art of sewing seems to have occupied the minds of men in various countries of the world over a long period before a practical working machine was actually produced, and there is a record of a machine being patented as long ago as 1775, by one C. F. Weisenthal, this machine having a needle with two points, and an eye at mid-length. Several other attempts were made at intervals to produce a satisfactory machine, and in the year 1830 a Parisian named Thimonier invented a machine made of wood, and eighty of these machines are said to have been used at one time in Paris for the making of Army clothing. Other machines were brought out from time to time, and between the years 1846 and 1850 quite a number of machines were patented. During the years immediately following, after considerable litigation over patent rights, certain makes came seriously on the market, and in 1863 the annual sales of one firm of manufacturers (The Singer Co.) amounted to 21,000 machines. The output of the same firm in 1896 was 800,000 machines. During the last fifty years there has been a constant evolution in the construction of these machines, and a ceaseless attempt to enlarge their usefulness by adapting them to the performance of every stitching operation, so that now it is difficult to conceive that a higher standard of perfection can be reached.

The first Clothing Factories were established in London, for the manufacture of Army and Navy clothing. These were in existence before the invention of the sewing machine. In these early days the trade was carried on amid conditions which were described by Kingsley in the pages of "Alton Locke," and brought home to the hearts of the people by Tom Hood's "Song of the Shirt." The conditions of the trade in London have, however, vastly improved by the introduction of the sewing machine, and there are now many factories employing large numbers of hands, and fitted up with the latest appliances. The trade was introduced to Leeds by the late Sir John Barran, Bart., who originated the idea of working sewing machines by power, and established a factory in this town in 1855. Since that date the trade has developed enormously in Leeds, which has now become by far the most important centre of this industry, having the largest and most up-

to-date factories. Other Clothing Factories are found in the Hebden Bridge district of Yorkshire (these principally for fustian clothing), in Manchester, Wigan, and other towns in Lancashire, in Birmingham and the Midlands, in Northampton, Kettering and district, in Norwich, in Bristol, Stroud, and the West of England, and in Glasgow. In fact, such factories are found very nearly in every part of the country, and almost in every large town there must be one or more risks rateable under the Clothing Factories' Tariff.

We may now enumerate and describe shortly the various departments found in a Clothing Factory, in the order in which the material passes through the various stages from the cloth to the finished garment.

The first is the Cloth Stockroom, where the cloth is received, measured, checked, rolled up, numbered for identification, and taken into stock. In this department patterns are cut, by hand or by guillotine cutting press, numbered, and made up for sending out to customers. There is also a stockroom for trimmings, linings, buttons, thread, and the like, generally known as the trimmings stockroom.

We now pass to the Cutting Room. The cutting for "measure orders" or "specials" is done by hand, for though the great bulk are ready-mades to stock sizes, many orders are taken to measure. But the greater part of the work is done by machinery, the machines being endless band-knives, on the well-known principle of the band-saw used for woodworking. By these machines as many as fifty layers of cloth are cut to one pattern at once; the small parts, such as pocket flaps, may also be cut or stamped out by cutting presses. Before the actual cutting is done, the pattern of the garment is marked in chalk on the surface of the cloth, an operation of skill on which depends the minimum amount of cloth being wasted. For this purpose it is necessary to have an elaborate series of patterns. These are generally of brown paper, and represent a considerable value; on the other hand the changes in fashion often necessitate the preparation of an entirely new set of patterns, and the old ones have then no more value than so much waste paper. The patterns are stored in the cutting-room, or there may be a separate pattern storeroom.

After cutting out, the material is taken to the Machine or Making-up Room. This appears to be the busiest room of the factory. In the cutting-room all men are employed; in the machine

room it is essentially women's work. Here are sewing machines adapted to almost every stitching process. Of these a few varieties are: ordinary sewing machines for sewing together the parts of the garment, five-needle machines for quilting the linings, button-hole making machines, sleeving machines, paring machines (for trousers tops), binding machines for the same, tacking machines, barring machines for placing the bar-tack on button-holes and pockets, machines for sewing flat buttons and buckles, &c. These machines are generally ranged on long tables or benches, a row of machines on each side, the operatives sitting facing one another, and frequently there is a sunk portion or trough in the centre of the table for the reception of any loose threads or other refuse. Under the table passes a light shaft, from which the power is derived by a strap to each machine. This shafting is very light, and is frequently fitted with ball bearings, for the minimising of vibration and for economy of power. There is often a separate machine-room for white work, and a "measure" machine-room where measured goods, on which more care is expended, are made. In the machine-room there are generally pressing irons, of which mention will be made later, as during one process of sewing and another it is often necessary to press the goods for convenience in working.

The next department is the Finishing Room, where the work is mainly or wholly done by hand. In this room the linings are put in, waist bands and the like sewn on, and buttons stitched on.

The garment now passes to the Pressing Room. Here will be found one or more stoves for irons, fire-heated or gas-heated, where such irons are used. Box irons, heated by gas burning in the iron itself, and irons heated by electricity are now, however, rapidly superseding the tailor's "goose." An efficient type of gas-heated iron is one in which "atmospheric gas" is burnt on the "Bunsen" principle, the burners being inside the iron, the upper part of which is of asbestos on perforated iron, which serves to keep the handle cool. A later type of iron is one heated by compressed air and gas. Air under pressure and coal gas are admitted together in the proportions of about five parts by volume of air to one of gas; the mixture burns at two jets playing on an iron bar which becomes red hot, the whole being enclosed in a box similar to that of the atmospheric gas iron, except that once the gas is lighted no ventilation is required save one very small opening, and the flame is entirely contained within the box. For the air compression

a fan is of course needed, and one fan is sufficient for any number up to, say, thirty irons. In both types of irons the gas is conveyed from the fixed pipes to the irons by means of a flexible tube, generally of india-rubber. For sleeve pressing there are pressing machines heated by gas on similar lines to the above described, the iron being fixed to a jointed arm, and the pressure applied by a treadle lever. A similar pressing machine is also used for blocking or shaping the shoulders of garments, and other special pressing work; also there are gas-heated trousers stretchers. Electric irons are heated by a resistance within the iron connected with the electrical supply by flexible wires. After pressing, the garments are brushed and examined, folded, tickets sewn on, and then pass to the finished stock room, and to the despatch-room or shipping department. In the latter there may be a stove for heating branding and soldering irons.

Other departments found in a Clothing Factory are: the engine-house, boiler or heating apparatus house, offices, counting-house, and workpeople's meal-room. There is generally a separate room for storing rags or clippings and sorting them, those of all-wool cloth being separated from those of cloth containing cotton, and the cotton rags from linings and the like forming another class. The sorting is often done over a screen or riddle through which the dust drops. There may be also a mechanics' or fitters' shop for repairs, a joiners' shop for repairs (and in large factories for box or case making), a tanners' or smiths' shop, containing smiths' fire and tanners' stove, for making metal linings for export cases.

We will now speak of the form and general arrangement of factory buildings. I remember being told by an old Surveyor that he could write a description of a cotton mill on seeing it from a distance without going inside, so much are such mills built and arranged on similar lines. The same remark, though in a less degree likely, could doubtless be made by Surveyors who have had experience in woollen mills, it being possible to distinguish the mill, willey-house, and other buildings by their position and appearance. With regard to Clothing Factories, on the other hand, there is no conventional pattern, and many and diverse are the plans on which they are built and fit up. The older factories are located in adapted buildings, buildings originally used as warehouses or mills. These are generally of four or more storeys, the ground floor and second being offices and stockrooms, and the upper storeys work-rooms. In these risks a gas engine will generally be found to be

the motive power, and is almost always in the main building, in a compartment formed by wood partitions. The heating apparatus will probably also be in the main building : in fact, in most factories of this class, especially in the centre of a town, there are no yard areas, and no outbuildings. This type of factory is found in the centre of a town, and there are often other tenants in the same building occupying for sale-shops, offices, or warehouses. A later type of factory is seen in comparatively new buildings, from four to eight storeys in height, near the centre of the town. These buildings are substantially constructed and often of imposing architecture, of varied and, in some cases, peculiar shape, being adapted for the site in the centre of towns where land is dear. These have been specially built for the purpose, having lofty floors, some with independent fireproof staircases and hoists, and with gas engine or steam engine and boiler in a fireproof room in the basement, or in an outbuilding. The most modern type of Clothing Factory is built as a shed, generally with a basement under. These are necessarily situate some distance from the centre of a town, where land is not so dear. In these factories the different working departments are generally in one open room without dividing partitions, there being no convenience in, or necessity for division. Only the offices, stock-rooms, and workpeople's meal-rooms are separated, whilst the engine and boiler or heating-apparatus rooms are in detached buildings. These are certainly the most desirable risks of the class, but many of such have lofty basements under, which make them virtually of two storeys, and these are of course not so ideal as sheds without basements or with fireproof basements only. The above is applicable to factories in Leeds.

Among the factories in London, many, and I believe the greater number of them, are of the type of older factory described above, with several tenants in the same building or communicating buildings, and subject in many cases to the conflagration hazard of a congested city area. Newer storeyed factories have been erected in recent years in less central parts of the Metropolis. In many of these London factories, even in those employing 700/800 hands, the sewing machines are worked by treadle, power being only used, if at all, for the cutting machines. Of the factories in various parts of the provinces, whilst here and there are found some fine new factories, for the most part they are of the older storeyed type, in adapted buildings, and with other tenants.

In considering the elements of fire risk in Clothing Factories, we have to admit that there are not inherent in the business many features of hazard, there are not many probable causes of fire, that cannot be eliminated without hindrance to the trade interests. There is no manipulation of highly inflammable material, no fluff or dust given off in the processes. There are no high-speed machines with danger of friction and overheating of bearings. The machinery is light-running, the power required being not of any magnitude, no heavy shafting being necessary, and no large rope races through the floors. There are no processes of drying. Whilst, however, there is not necessarily much actual hazard of a fire commencing, the danger of a fire which has already originated being accelerated by the structural conditions and the nature of the contents, is greater than in many classes of risks. This is particularly the case in regard to the numerous storeyed factories lined very often with match-boarding throughout, and in some cases with wooden hoists, well-holes, and open staircases through the floors. How fiercely these can burn when once a fire breaks out, Yorkshire Insurance men know only too well. Fortunately, many of these risks have been protected by sprinklers in recent years. Few Clothing Factories have been built on fireproof lines, it not being considered, apparently, that there was enough fire risk to warrant this increased cost.

The Clothing Factories' Tariff is not yet ten years old, having been first issued in 1897, and, considering its youth, its utility in improving risks has been remarkable. Previous to the issue of this tariff, the risks were rateable under the Woollen Warehouses' Tariff for five years, from 1892 to 1897, and the tendency of this tariff in the improvement of risks was in the right direction, but the rates were undoubtedly too low. As for the rates at which risks were underwritten prior to 1892, the least said the better. There is no doubt that this tariff appeared a little too late to have all the effect on risk improvement that could be desired. Many of the leading firms in the trade had already erected new factories of handsome appearance and imposing dimensions, but with a woeful disregard of those points which we now consider defects, and deserving of extra rating. These factories are often six or seven storeys high, and owing to their size and the necessity there is of having a good light on the work, have a very large proportion of window area in the outer walls, and frequently large well lights through the floors. The tariff is certainly a good one in that the items of risk for which

penalties in the shape of additional rates are imposed have been judiciously chosen. The mild extra for defective construction is one with which everyone will agree, but it is rather inconsistently imposed, for whilst the extra rate will be considered applicable for a few square feet of timber in the outer wall, we probably all know factories where the walls are practically of wood and glass between brick piers, the owners of which regard themselves as hardly treated in having to pay the extra rate, whilst other buildings are treated as doubtful and the charge waived, under the plea that it is simply a case of more window area than usual. This question would be better provided for if the extra rate were dependent on the proportion of window area to the total surface of the outer walls, on similar lines to the charge for wood construction in the Shipbuilders' and Metal Workers' Tariff. The extra rate is so small as to be quite inadequate to meet the additional risk of a factory being constructed in a large proportion of wood and glass, and is probably only sufficient to cover the additional risk of lantern lights, or such small portions of wood and glass as are often found in rear walls.

As regards the height of factories, four storeys is probably less than the average number, and seven-storey factories are not uncommon. Although, as stated before, sheds are now being built by several firms, we have, I think, to look forward to the construction of still higher factories in the future, as despite the increasing means of locomotion, central situations have undoubted advantages, and often when a firm already established near the centre of a city find it absolutely necessary to extend, there is only one direction in which they are able to do so, viz., skywards. Now there is no doubt that the additional risk increases with each extra storey at an accelerated ratio, owing both to the greater danger of the walls collapsing, and to the increasing difficulty of efficient extinguishing operations. Moreover, where several such high buildings are erected near to one another, there is produced a conflagration hazard, the possibility of a fire sweeping from one building to another beyond the control of the Fire Brigade. The height charge in this tariff is undoubtedly a very light one.

The risk of multiple tenancy is recognised, but cannot be said to be met by the tariff, as the very slight extra rate is equally applicable if there be twenty tenants, and if there be two only. The possibility of some hazardous trade being carried on by a tenant other than the clothier is not provided for, and the extra

rate for tenancy is the same for a brushmaker's workshop as for a non-hazardous saleshop. Of course, in these cases, an Office can always quote a special rate, and let the business go by if need be, but the sanguine Surveyor or Branch Manager will probably be disposed to accept the risk at the tariff rate, knowing that some other Office will readily take it. Fortunately the newer factories, in Leeds at any rate, are almost all in single tenure.

Wooden ceilings are an obvious addition to the risk. They are often met with, especially in stock-rooms, where dust and damp must be guarded against, and frequently factories are so lined and ceiled throughout. The wood used is practically all pitch pine, well known as resinous wood and readily inflammable. The extra rate imposed by the tariff for these linings has a decided effect, and means have been found in many factories to dispense with them, and to reduce wood partitions to the height of six feet allowed without extra charge, the upper portion of the partition being formed of galvanised iron when necessary to be continued to the full height of the room.

Floor openings are charged for under this as under many other tariffs. A hoist is practically always necessary in a Clothing Factory, and if it be of wood, or brick with wooden doors, the efforts of firemen to confine a fire to one storey are rendered almost useless. This was strikingly experienced in the eye of many onlookers in the case of a fire which occurred in Leeds some years ago, when the flames roared up a hoist like a furnace, and the jets of water which the firemen pluckily poured into it from a self-supporting ladder, were seen to be of no more use than a toy squirt. Trap doors under four feet in superficial area are allowed, but not often found.

With regard to stoves, there is no doubt that stoves or ovens for irons, however heated, are an addition to the risk. They are generally "fired up" more and give out a greater heat than stoves for warmth, such heat being a severe trial to any woodwork or combustible material on which the heat may act or to which it may be conducted. The safe fixing of stoves is not a question that belongs peculiarly to Clothing Factories, but it may be noted that whilst the tariff stipulates that fire-heated ovens, to be rated at the minimum extra, must be fixed on brick, stone, or concrete, there is no mention of what the said brick, stone, or concrete should rest on. This is an important point, as experience has frequently shown, and a stone flag or layer of concrete laid directly

on a wooden floor is an undesirable arrangement. There should certainly be a brick arch as base, or a solid stone or concrete base, with no wood or other combustible material under. Gas-heated ovens are better provided for in this respect by the rule that they shall either be elevated six inches above the flags or concrete, or that the flags or concrete be elevated twelve inches above any wooden floor. The old method of loose irons heated by ovens and stoves is rapidly disappearing, and a large maker of clothiers' utensils recently informed me that, although he formerly did a good trade in the making of these ovens, now he rarely makes one, so much is the use of gas or electrically-heated irons becoming general. With regard to gas-heated irons, I have noticed that Surveyors in the South of England generally insist that the flexible connecting tube be of metal instead of india-rubber. This is not generally asked for in our district, and the makers say the metal tubes are more dangerous, as after use for a very short time the joints in the metal tube leak; there certainly seems to be hardly any heat conducted from the iron to the flexible tube, and the india-rubber tubes have a short wire spiral nearest the iron as protection against "kinking," which might cause the light to go out whilst the gas was left on. Electric irons have not come much into use in Clothing Factories, where the pressing work is heavy and continuous. This arises apparently from the fact that they are generally provided with iron stands, combined with a switch which turns off the current when the iron is placed on the stand, and on again when the iron is taken up for use. The operatives often refuse to use these stands, as the iron is too cold when they pick it up again, the current having been switched off, and they lose time in piecework. If they do not use the stand, on being left on the bench the iron becomes too hot, and, when they pick it up, scorches the material. There is, moreover, a considerable danger to the bench if the iron be not placed on the stand, as it becomes very hot. In fact, as small heaters without visible evidence when the current is on, the irons are liable to be left on for long periods, and so cause fire risk, as well as destroying themselves through overheating. There are also dangers arising from the wear and tear on the twin flexible. Nevertheless, for occasional work, these irons are coming into more frequent use.

The question of lighting of Clothing Factories presents no special features, and it is probably rare that gas or electricity is

not available. In factories where wooden partitions occur, the position of the gas lights in regard to them requires attention of the Surveyor, and in crowded stock-rooms naked gas lights are often, and very rightly, fitted with wire guards. Electric arc lamps must be of an approved type in risks like these, where falling carbon would easily cause considerable damage.

The question of heating has been dealt with by able men in former papers. It may be mentioned that stove-pipes have been almost exterminated by the extra charge for any stove with more than three feet of pipe. A comparatively recent addition to the tariff allows a system of heating that has lately become more prominent, viz., that of hot air heated by gas. In factories where steam power is not used, and no steam is available, some other apparatus becomes necessary, and in towns where gas is cheap the system which uses gas for heating air is found convenient. The apparatus consists of a number of "Bunsen" burners in an iron chamber with vent-pipe to a flue; this chamber is enclosed in an outer one through which the air passes by means of trunks drawing from the outer air, through canvas or other material to act as filter, and conveying the heated air forward to the rooms. The whole apparatus is enclosed in brickwork, and there is of course no communication between the chamber in which the gas is burned and the hot air that passes to the rooms. I have seen a similar apparatus in which the heating was by a mixture of compressed air and gas, a kind of blow-pipe flame similar to that of a brazier's hearth, and in this case power is of course necessary for working the fan, but there is economy in gas consumption. A hot air apparatus in which air is heated by steam pipes is also allowed, but in my experience, where steam is available, steam pipes in the rooms are preferred. The high-pressure hot-water apparatus is sometimes met with in Clothing Factories, and the fixing of the pipes cannot receive too careful attention, particularly where wood partitions abound. Although there have been some opinions expressed to the effect that the hazard from such pipes is problematical, more than one instance has come under my notice proving conclusively that woodwork in contact with or less than one inch from the pipes, will become charred sooner or later. Quite recently, in a public institution, high-pressure pipes were found in contact with the floor, and the Insured declined to alter them, bringing in a plumber to support their opinion. By much persuasion they were induced to have

one set of floor boards taken up, and found that the heat had worked into and charred the woodwork throughout. The Insured then thanked the Company most sincerely for pointing this out.

All kinds of power are used in driving the machinery. In the largest factories steam power is often found, but in the great majority of factories throughout the country gas engines are the motive power, and oil engines in the few factories situated where there is no public gas supply. A boiler, gas engine, or oil engine in the factory entails an extra rate under the tariff, and certainly any of these are an increase in risk. Electric power is now, however, rapidly being adopted, and there is no doubt that for light machinery such as is found in these factories it has no equal, the motors occupying so little space, being so easily fixed, being clean in use, and easy to start where the need of power is intermittent. There is now no charge for electro-motors under the tariff, but it will be remembered what trouble arose when the rule was that motors must be of the enclosed type. This was particularly the case in Leeds, where the public current is alternating, as for some time there was apparently no alternating current motor on the market that could be completely enclosed without dangerous over-heating. In one instance a metal case was fixed over a motor at the Company's request, and it was found that the case became dangerously red hot, so as to be a greater danger to the factory than the motor without case. Had gas engine manufacturers not progressed in competition with the providers of electric machinery, it is probable that such engines would have gradually become obsolete; but a new apparatus has recently come to the front which has had a revolutionary effect in reducing the cost of power. This is the suction gas plant, by which gas is generated on the premises from an anthracite coal fire through which atmospheric air and steam is passed, producing a gas (principally carbon monoxide) which passes through a scrubber and direct to the gas engine. For the suction gas engine it is claimed that, taking the price of anthracite at 25s. 9d. per ton, the cost per brake horse power per hour is only $\cdot 127$, or one-eighth of a penny, and that at this cost, with an efficient dynamo, electricity can be produced at one-fifth of a penny per unit. On this account several smaller factories are adopting suction gas plants for direct driving, and larger factories are laying down the same plants to drive dynamos supplying current to electro-motors in the rooms. the tariff would appear to require some addition to deal with

this question of suction gas, and where the generator should be fixed. One well-known large factory in Leeds is worked by electro-motors, the current generated on the premises by steam turbines directly coupled to dynamos.

In the tariff the question of accumulation of risk is met by additional rates for hands over 200, and whilst several factories have over this number, the greater number have less. One factory in Leeds employs 2,000 hands, but not all in one building.

Waterproof garment factories are very similar to ordinary clothing factories, but have the added risk of the use of india-rubber solution, an inflammable mixture, the properties of which are well known. A small tin of solution and one of naphtha is used by each operative, their being often a lid which can be shut should the contents catch fire. For the use of this an extra rate is charged, and there is to be a warranty that no such solution be made, and not more than one day's supply kept in the building. The people who use these inflammable solutions day by day have generally a contempt of the danger bred of familiarity, and a waterproof factory recently came under my notice where solution was made cold with naphtha in a metal pan of 5/10 gallons capacity, in the ordinary workroom of the factory, lighted with naked gas lights. The waterproof garment trade does not appear to be so extensive as it was a few years ago, and these rubber goods appear to be "going out," and giving way to so-called rain-proof cloths.

The question of the sweeping up of all cloth clippings from the workrooms is an important one as regards fire risk. When one remembers that probably one-third of all the material dealt with consists of cotton linings, cotton wadding, and the like, it is obvious that the presence of a litter of such material on the floor is a serious addition to the risk, as must also be the existence of a considerable heap of these, even when accumulated in bins in a special storeroom in the main building; the cotton wadding is especially inflammable. The tariff imposes an extra rate for cases where they are not removed weekly, and a general rule is applied that in no case shall they be removed less often than once a month.

With regard to the wipes used for cleaning machinery, it is found that in some factories each machinist is provided with a cleaning cloth for cleaning her machine, but in most cases cotton clippings are used, and when dirty thrown into the trough on the

machine bench, generally on Saturdays, when half-an-hour is allowed for cleaning up before closing; these are then removed and burnt. I have never met with metal receptacles. In smaller factories and workshops it is doubtful if bits of cotton clipping are not used for cleaning, and thrown on the floor to go away amongst the clippings; but this would not occur in the larger, well-regulated places, on account of the value of the rags, which are sold at comparatively good prices.

Rateable under the tariff are numerous workshops employing more than 25 hands and not using power. Among these are many conducted by Jews, and familiarly known as "slop shops," to which work is given out by the larger factories to be made up. In these workshops the material worked on does not belong to the occupier, but only what sewing machines and fixtures there may be, so that moral hazard is not so likely to exist. I think also it will be admitted that Jew tailors as a class have improved considerably in recent years.

In considering the question of improvement of risks, it will perhaps be instructive to compare two or more factories. [Here were shown on the screen plans of various factories, and descriptions given, showing the difference between a good and lightly-rated risk, and a less satisfactory and more heavily-rated risk.] Many instances could be given to show the beneficial effects of the tariff in bringing about the improvement of risks. Although the salient points of risk are enumerated in the tariff, a careful survey of premises is very necessary, and there are many small, almost undefinable, points of difference in a desirable risk and an undesirable one, which can only be duly appreciated by a Surveyor of experience. Without such experience a Surveyor takes alarm at features absolutely normal, whilst overlooking others which are of serious importance.

Those London factories which are situate north of the river Thames, and within a mile of the Royal Exchange, are excluded from the Clothing Factories' Tariff, and are rateable under the London Manchester Warehouses' Tariff. This tariff is much more stringent as regards construction, there being an extra rate if the walls be not entirely of massive construction, or if the party walls be not carried through and above the roof at every point. There is also an extra rate for skylights, and for any structural metalwork such as iron joists or columns not covered with brick, plaster, or cement. On the other hand, there is no extra for some

features penalised under the Clothing Factories' Tariff, as, *e.g.*, gas engines and stoves for irons. The normal and also the additional rates vary in accordance with the cubical contents of the premises, and there are high extra rates for several congested areas. Whilst some of the country risks would get off more lightly if rateable under this tariff, others would be rated more heavily.

In considering the causes of fires in Clothing Factories, I find that nearly one-half are put down as "unknown." Often it has happened that the premises have been locked up safely, and a few hours later an alarm of fire has been given, but not until the fire has got a good hold. The causes of fires that have been put forward are: "match thrown through street grid," "lighted paper," "down draught," "gas explosion," &c., just the causes which we find in regard to warehouses.

Doubtless losses might be lessened in fires occurring out of working hours by the adoption of a patent fire alarm, this latest device to be recognised by the F.O.C. In regard to the heavier storeyed risks, probably only automatic sprinklers can give adequate protection and timely alarm. Whilst in fires in this class of risk water damage is considerable, perhaps it is not generally realised what serious claims may arise for smoke damage only. When cloth or ready-made clothing becomes impregnated with smoke, there is room for much difference of opinion as to the extent of the deterioration caused. In one case a certain Office paid a claim of £1,100 for smoke damage caused by some packing straw taking fire in an adjoining building; the original sum claimed was £3,500. In regard to the extent of the losses, investigation from information at my disposal shows that the underwriting of these risks at tariff rates has not yet produced the results desired. The loss ratio is much too high, particularly with regard to the smaller factories. Whether this will be remedied by the gradual improvement of risks, or by an increase of the tariff rates, remains to be seen.

In concluding my paper, I have pleasure to express my indebtedness and thanks to Messrs. John Barran & Sons, Ltd., to Mr. H. Allman, of the Singer Manufacturing Co., and to other gentlemen who have kindly assisted me in obtaining information.

COMPARISON OF BRITISH AND FOREIGN FIRE INSURANCE METHODS.

By Mr. E. B. HILES.

*A Paper read before the Insurance Institute of Manchester,
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IN considering the scope which is to be assigned to the word Foreign in the title of my paper, as ordained by the Committee of the Federation, I have decided to treat Foreign as including Colonial, and in so doing I am following the example set by almost all companies, who consider their Colonial business as forming part of their Foreign business.

Now, when we come to compare Foreign with Home business, one radical difference at once presents itself. In this country there is absolute freedom of Trade in Fire Insurance. Any Company or individual can carry it on without being compelled to make a deposit or give any security for the fulfilment of his or their obligations. It is not so in many Colonies and Foreign Countries. The Colonies of the Cape, Natal, Transvaal, Orange River, and Dominion of Canada all require Deposits to be made by Fire Companies, as do four of the United States, Spain, Mexico, Argentine Republic, Chili, Brazil, and Japan, and an attempt was lately made by Turkey to exact a similar requirement.

New Zealand requires a certified statement of accounts annually, the form being a partial imitation of that used in the United States. All the States of the Great Republic across the Atlantic require a statement of accounts annually, in which the securities are re-valued every year and numerous replies are exacted as to sums assured and re-assured, amount of risks expired during the year, etc., etc. Another very onerous requirement in the United States is that the Trustees of the Company, who must be United States citizens, must hold sufficient securities to equal the amount of unearned premium on the unexpired risks, calculated according to a

complicated method, and this in addition to the deposits. The effect of the deposit Laws, in the various Colonies and Countries, is that a Company wishing to commence business in all of them would require to put down a sum of at least £200,000.

Another important difference is seen in the manner of conducting the business. Home business, apart from that conducted by Head Offices, is in charge of Branches, the Managers of which are fully-trained Insurance men, exercising an effective control over their Agents, whose operations can be known and controlled within the course of post. On the other hand, the Foreign or Colonial Agent is practically debarred from consulting his Head Office regarding the minutiae of his business, and therefore precise limits to his powers have to be assigned and detailed instructions have to be given to guide him in the conduct of his Agency.

The Foreign or Colonial Agent derives his authority from a Power of Attorney under the Seal of the Company. This Power, after stating that the individuals named in it are appointed the Agents of the Company, goes on to declare that they are authorised to accept risks and issue Policies, and settle losses, either out of funds in their hands or funds obtained by drawing on the Head Office, and the Company ratifies and confirms whatever they may rightly do under the Power. The Power includes authority to sue and be sued.

Some of the British Colonies require the Power to declare that the Grantors ratify whatever shall be done between the time of the revocation of the Power and the time of such revocation becoming known to the holders of the Power.

Most Companies limit their Agents to the issue of such Policy forms only as have been supplied from the Head Office. This is a very desirable provision, as it settles the terms and conditions on which risks are accepted. Such a limitation is especially necessary when, as in some cases, the Acts of Parliament or Deeds of Settlement of Companies declare that any Policy issued by a duly-appointed Agent out of Great Britain is valid and effectual.

The instructions given to a Foreign Agent are usually contained in a printed book, which may run to between 20 and 50 pages quarto. This book gives the Agent instructions as to taking proposals, enquiring into the risks, and issuing the

Policies, and as to renewals, also as to the mode of settling losses and drawing on the Company. Of course, in the case of an Agency in a locality for which a Tariff has been issued by the F.O.C., the Agent has to be supplied with a copy of the Tariff.

One feature which claims notice here is the Policy form used by the Companies in Foreign Countries and Colonies.

By recent legislation of the Fire Offices' Committee a uniform Policy is issued by all the Companies on Foreign risks accepted in the United Kingdom and by the Agencies in India, Burma, Ceylon, the West Indies, the Guianas, British Honduras, and Ecuador.

This form, while ensuring uniform conditions and practice among the Companies, has been found capable of improvement in certain particulars. The clauses dealing with losses by fires caused by war, insurrection, and earthquake were not a fortunate piece of drafting, and steps have lately been taken to improve them.

The views enunciated by the Courts of California in the year 1906 show that an earthquake clause cannot be too stringent in its terms; and the Offices have lately deliberated upon an earthquake clause much more definite and stringent in its terms. It could have been wished that a clause could have been agreed upon declaring that immediately an earthquake occurs the Policy shall become void and remain of no effect for a certain period after the earthquake—say, from three to seven days—so as to eliminate all possibility of being made liable for any fire caused directly or indirectly by earthquake.

The provision regarding non-liability for fires caused by warlike operations or the action of rebels cannot be too clearly drawn. As altered it now declares that the Policy is suspended during war and civil commotion, unless proof be given that the loss did not arise from warlike operations or civil commotion.

And here, I think, it would not be amiss to record that, so far as I am aware, no British Company paid any loss arising from the fires caused by the bombardment and subsequent rioting in Alexandria in 1882, by the military operations in China in 1900, the insurrection and subsequent military operations in the Philippine Islands in 1898 and following years, and the South African War of 1899-1902.

The terrible effects of a modern bombardment in causing fires are such that no precaution, however minute, is too great for the Companies to take in order to make their non-liability clear beyond cavil.

With these preliminary observations, let us start out on our journey and cross the Channel to France. And here at this point I have to express my thanks to the Editor of the "Review" for allowing me to quote, for the purposes of this paper, from an exhaustive article which appeared in that journal in 1887, dealing with business in France. The interest taken by the Editor of the "Review" in the various Institutes and the Federation is well-known, and on this ground also his permission is gratefully acknowledged.

There are about 30 Companies in France, some of the existing Companies dating from 1816, immediately after the fall of Napoleon, but we shall see later on that Napoleon left his impress on Fire Insurance as on everything else in France. The law in France requires that at least 20 per cent. of the net profits must be set aside every year to form a reserve fund, until this amounts to one-fifth of the subscribed capital; that the funds must be invested in State securities or certain Railway bonds; and the law lays down that certain particulars as to the maximum amount accepted on one risk and as to the conditions under which the Company may be dissolved have to be given to each insurer.

The Policy form in France is different in many respects from that to which we are accustomed in this country. It is generally printed quarto size, and the conditions are somewhat lengthy. They exclude certain things from the insurance unless specially mentioned, and they also exclude losses caused by invasion, insurrection, and riots, and also by volcanoes and earthquakes.

Generally, policies on buildings and contents of houses and factories are issued for a term of 10 years, and the insured can be compelled by law to pay his premium annually unless he gives three months' notice of his intention to drop the policy. Similarly the Company, if it wishes to rid itself of the risk at the end of any year of the ten, must give three months' previous notice.

Every French policy, whether on buildings or contents, is subject to *pro rata* average.

The taxes levied on Insurance in France are at the following rates:—£6 per million pounds of sum assured, now proposed to be raised to £10 per million, for Fire Brigade purposes; about one penny per £100 sum insured for stamp duty, and 11 per cent. on the Premiums for registration duty, all these taxes being collected from the insured.

The policy is issued in triplicate, each example being exactly like the others. One is kept by the insured, another by the Company, and the third by the Agent.

We will notice the effect of the Code Napoleon on Fire Insurance. Articles 1382-1383 and 1384 of the Code run as follows:—

“Any act whatever which causes damage to others makes the person by whose fault it has arisen liable to repair that damage.”

“Each is responsible for the damage which he has caused not only by his act, but also by his negligence or imprudence.”

“Each is responsible not only for the damage which he causes by his own act, but also that which is caused by the acts of persons for whom he is responsible or by things which he has under his care.”

Under these regulations the owner of property or goods which are burned may under certain circumstances be made responsible for the damage sustained by his neighbours through the burning. This is called the “Recourse by the Neighbours.” To obtain the benefit of this recourse it is necessary that the neighbour prove that his loss was caused by the fault of him on whose premises it originated. This recourse of the neighbours against a man is covered by insurance, and as the *onus probandi* is on the neighbours, and not on the man himself, the liability of the latter is covered at one-fourth of the ordinary rate of the property. No insured can recover under his policy and also claim against his neighbour, as such action would make the insurance a source of profit which is contrary to French law. If a Company pay a loss it is subrogated into the right of its Insured, and may bring an action against the person who caused the fire.

The liability of tenants to their landlords is also laid down by Articles 1733 and 1734 of the Code. They read as follows:—

“The tenant is responsible for a fire unless he proves that

it happened through unforeseen circumstances, through a superior force, or through fault in the construction of the premises, or that the fire had been communicated from a neighbouring house."

"If there are several tenants, all are responsible for the fire proportionately to the value of the part of the premises which they occupy, unless they can prove that the fire originated in the part occupied by one of them, in which case he alone is held responsible, or that some of the tenants can prove that the fire did not originate with them, in which case they free themselves from liability."

This risk is called the "Tenant's risk," and in virtue of the law the owner of a house has the right to sue the tenants of the house for payment of the damage which his house has sustained, and in order that he may recover, the law only requires proof of the damage, without any reference to the cause, as the presumption of law is that the fire arose from default of the tenants, and it lies with them to prove that they are not liable.

The insurance of the tenant's risk, like that of the neighbour's risk, forms an important item in French business, and in covering it the Companies take over the tenant's liabilities to his landlord up to the amount for which they insure. In cases where there are several tenants, the responsibility of each is calculated at 15 times his rent.

The Premium chargeable for tenant's risk is usually the same as is charged for the building, but if a Company insures both the landlord and the tenant it charges the latter half and in some cases a quarter of the rate for the building.

The law having put this burden on the tenant, also contains some provisions for his protection. Article 1386 reads:—"The landlord of a building is responsible for the damage caused by its destruction when it happens in consequence of want of maintenance or by a fault in its construction." Article 1721 reads:—"The landlord is bound to guarantee the tenant for all the defects in the building which would prevent the proper use of it, even although the landlord may not have known of them at the time of the Lease being made. If there result to the tenant any loss through these defects the landlord is bound to indemnify him." These two Articles provide for the recourse of the tenant against the landlord, and the rate

for covering this liability is the same as is charged for the recourse of the neighbours.

I will conclude my notice of France by remarking that there are two Tariff Bodies in that country, one consisting of five Companies called the Committee, and another consisting of two companies called the Syndicate. A few important Companies do not belong to either body. The French Tariffs rate almost every class of risk, but do not provide for much differentiation of rating within the various classes.

No deposit is required to be made by a Foreign Company doing business in France, but, in addition to the taxes which the Companies collect from the assured and pay over to the Government, they have to pay what is equivalent to an Income Tax, being a tax on that portion of their profits which their French business bears to their whole business. Thus an Income Tax may be payable in France disproportionate to the profits made in France.

We will now glance at Spain. Companies are required either to deposit about £10,000 in Spanish securities with the Treasury, or they can deposit each year in Spanish securities 20 per cent. of their Premiums until the total deposit reaches £10,000. The Government was not very particular in demanding this deposit until about a year ago, when they required the Companies to make up the arrears of deposit for back years.

In walking through many of the larger Cities in Spain one is struck by seeing on many of the houses a tablet of marble bearing the Spanish for "Insured against Fire." This shows that these houses are insured (as regards buildings) in a Mutual or Municipal Society, and the old-fashioned lettering and spelling of many of these tablets shows that the insurances are of long standing. I noticed these tablets—especially in the South of Spain—in Seville, Cadiz, and Jerez, and I also noticed them in Madrid. Of course, the existence of these Mutual Societies withdraws good business from the Joint Stock Companies.

The Spanish Policy form is not unlike the French form. It makes every insurance, whether on building or contents, subject to *pro rata* average.

In Spain, a country where the *dolce far niente* is an article of belief, and competition is not severe, it is not difficult to maintain rates.

I believe a Tariff exists among the Tariff Companies, but I never saw a copy of it, and I hope I will not be considered guilty of a contradiction in terms when I say that the only Spanish Tariff I have possessed was one issued by a so-called Non-tariff Company.

In Portugal the British Companies do a good business through their Agencies, sharing the business with about eight Portuguese Companies. In Oporto the vast wine stores are mostly insured by British Companies, no doubt in great measure owing to the fact that the Port Wine trade has for over two centuries been mainly in the hands of English firms.

A law imposing a deposit and heavy taxation on Insurance companies has lately been introduced into the Portuguese Parliament, but it has not yet been finally disposed of.

We will now take a survey of Fire Insurance in Germany. There are about 80 Municipal and Local Companies, mostly insuring buildings, and over 30 Joint Stock Companies. The German Policy form is very minute in its conditions. Its provisions regarding war-risk and earthquake are as follows:—
“ Excepted from the insurance are such losses as arise through military measures taken on the orders of a commander, or are the consequence of an insurrection, a breach of the peace, or an earthquake.” The English Companies do a good business in Hamburg. Some of them have been represented there for over 100 years, and the prompt payments made by English Companies after the great fire of 1842 are still remembered by the community. A very satisfactory Tariff regulates rates in Hamburg, and also deals with commissions and the number of Agents each Company can employ. It is worthy of remark in passing that every building in Hamburg is insured by the Municipal Fire Office. Consequently, the Joint Stock Companies can only obtain amounts on contents.

The business in the interior of Germany is regulated by a Tariff, and is mostly in the hands of native Companies, only two or three Foreign Companies doing any considerable amount of business outside of the Ports. Many Foreign Companies, however, transact a large re-insurance business with German Companies by means of Treaties.

In the month of September, 1905, the Chamber of Commerce of Hamburg enquired of all the British Companies, both Fire and Marine, what would be their attitude towards German

insurers in case war broke out between the United Kingdom and Germany. Most of the Companies replied that their desire would be to meet claims upon them in time of war as well as of peace. It is the settled law of England that claims under marine policies cannot be enforced by an alien enemy, and unquestionably the same rule of law applies to Fire Insurance. Therefore, while the declaration I have named no doubt represents the pious intention of the Companies, there is just a possibility that in contemplation of law it is capable of being set on one side by the Executive Government by means of a proclamation.

The large share taken by Germany in over-sea commerce, especially with South America, has led to large numbers of Foreign risks being insured in Hamburg. These are called Transatlantic risks, and a special policy form has been drawn up for them. They are all subject to *pro rata* average, and very exact conditions are laid down as to what is to be done in case of fire. Every loss must be advised by the next post, and if the claim is likely to exceed £500 the loss must be advised by telegram to Hamburg. A very good war and earthquake clause is contained in this Policy form, as it is laid down that any loss occurring during the existence of war, rebellion, hurricane, tempest, volcanic eruption, or forest or bush fires is to be considered as caused by such existing occurrence respectively, and therefore excluded from the scope of the policy, unless the assured prove that it was not so caused.

I do not require to say much about business in Belgium, as it is conducted very much on the lines of French business, but I may remark that the Companies are allowed to contract themselves out of the provisions of the Code Napoleon with regard to Tenants' and Neighbours' risks, so that the settlement of losses may follow the incidence of the various policies, as in this country.

Business in Holland requires a word of notice. In that country the Companies for the most part do not print their own Policy forms, but the acceptances are signed upon a form, called the "Exchange form," which the Broker fills in and gets signed by the various Companies. This form is worded something like a Lloyd's Policy, and is very archaic in its language. Until quite recently it did not exempt the Com-

panies from liability for losses caused by war and earthquake. No average clause is printed in the policy, but the average clause is part of the Statute law of Holland, and therefore is observed as a legal requirement.

A curious provision in the Statute law of Holland is that if there is more than one insurance on a risk and each policy does not mention the other, the earliest policy must be exhausted before the later one is called upon to pay.

In regard to Denmark, I may mention that the houses and plant of Copenhagen are insured by a Local Municipal Society, and as this Society takes the risk of war it has had twice to pay the loss arising from bombardments of that City.

In Austria the native Joint Stock Companies, 11 in number, are mostly joined in a Union called the Concordat, but there is at least one powerful competitor outside this Union. As in Germany, many Foreign Companies share in the business of the Austrian Companies by means of Treaties. There are 25 Mutual Companies in Austria.

A glance must suffice for Russia. Here the laws are practically prohibitive of Foreign Companies doing direct business, and consequently the British Companies confine themselves to re-insuring the Russian Companies by means of Treaties. Some of the most valued and oldest Foreign connections of the British Companies are with Russian Offices, and I may remark that during the troublous time in the last three years in Russia, the native Companies resolutely refused to pay for fires caused by rioters, and in so refusing they conserved the interests of their re-insurers.

Before we quit Europe a few words must be said about the Ottoman Empire. Turkey, until quite recently, was a Free Trade country as regards Fire Insurance, and the British Companies did a large business in the Empire through their direct agencies at Constantinople, Smyrna, and other Ports. The political history of Turkey has been such that Europeans, both individuals and companies, are not subject to Mahomedan law or taxation unless their Governments permit them to be so, and in this way the European Companies have escaped being trammelled in their operations. An attempt has recently been made by the Turkish Government to subject Foreign Companies to local laws and to require a deposit, but we must hope that the British Government, in concert with

those of France and Germany, will impose their veto on this attempt.

It is now time to turn our thoughts to Asia, and in some respects India, Ceylon, China, and Japan can be considered together. Some companies have Branch Offices in the East, but most Companies do their business through Agents. The opening up of India and China to general trade through the abrogation of the exclusive trading privileges of the East India Company in 1833 led the Offices to establish Agencies about that period, and some of the oldest and most valued connections of the Companies have been formed in the East. The circumstances of these early Agencies differed greatly from those of the present day. From some old records in the Office of my Company I find that in the early years the letters to China took four or five months on the voyage out, and the replies were not received until about a year had elapsed. Of course, this was in the days of the Sailing Indiamen.

In India some of the most valued clients of Insurance Companies are natives, either merchants or owners of Cotton Mills, and some of the Offices have native Agents.

The Tariff rates for all classes of risks in India are regulated by the Fire Insurance Associations of Bombay, Calcutta, and Madras; and, after a stormy period in Tariff matters, we can now congratulate ourselves on comparative calm, to the advantage of Companies and Agents both in pocket and temper.

In China, a most interesting section of the business is that of the insurance of the native property owners and storekeepers. With a race so inscrutable as the Chinese, and so widely separated from us in religion, education, and manners, it would be very difficult to transact insurance business satisfactorily unless the Agents had the assistance of their native compradores or shroffs, who, by their local knowledge and acquaintance among their compatriots, can obtain information denied to Europeans, and so select the clients for insurance with some idea as to their morality and financial standing. In those parts of China where native law is administered arson may be punished by death, but there, as everywhere else, it is better to select our client carefully beforehand, rather than rely on his subsequent punishment if he sets his place on fire.

In Japan the recent great industrial development has opened up a wide field for the Offices in the Insurance of

Cotton Mills and other factories. This factory business was for some years cultivated by only a few of the Offices at good rates, but of late years competition has set in and lowered the rates considerably for risks which have not been tarified. A deposit of £10,000 is required of every Company doing fire business in Japan, and a year or two ago most minute enquiries were made of the Offices by the Japanese Government as to their financial standing and method of working. There are a considerable number of native Companies working in Japan.

India and China are Free Trade countries as regards Fire Insurance.

From Asia a natural transition is to Australasia, consisting of Australia, Tasmania, and New Zealand. The Continent of Australia having been, since its settlement by men of British birth, always under British rule, its methods of Fire Insurance are similar in many respects to those of the Mother Country. However protectionist some parts of Australia may be as regards Commerce, in Fire Insurance it is wholly Free Trade. In the early days of the Colonies all the Companies were represented by mercantile Agents, but now many Companies have Branch Offices. The Policy forms are worded very similarly to those in use at home, but it was early found necessary to exempt the Offices from liability for losses caused by Bush fires or burning prairie grass. Owing to the fact that many new settlements or townships turn out unprofitable and cause a migration of their population, it was early found desirable to insert in the Policy Conditions a clause declaring that if any Hotel or place of refreshment has been vacant for a space of one month, the Policy upon it should cease to have effect, owing to the moral hazard frequently attaching to unprofitable properties.

In New Zealand we have the extraordinary circumstance of the Government carrying on Fire Insurance business, which it commenced to do two or three years ago.

The New Zealand Government had long ago commenced Life Insurance business.

The transaction of Fire Insurance business by the Government, naturally, was not favourably received by the Joint Stock Fire Companies, and they resolved not to assist the Government Insurance Department by re-insuring its surplus lines. It will be interesting to watch the development of this

Government Fire Insurance Scheme. It is a weakness of all such schemes that, owing to political pressure, it is more than ordinarily difficult to decline undesirable risks, as in a Democratic Community a Government department cannot be too exclusive in the choice of its patrons. I have already alluded to the Schedule of Inquiries required to be answered by all Companies doing business in New Zealand, and it is only necessary to remark that the Government of the Colony has not gone the length of imposing a deposit upon the Companies, no doubt having a lively sense of fear that such a deposit might cause many Companies to leave the Colony, and so reduce the facilities for insurance required by the mercantile community.

I may remark that in New South Wales there is also a Government Insurance Office, but its operations are likely to cease soon, as it has been discovered that it has £800,000 at risk in congested areas, with a reserve fund of £2,000.

A few words now about South Africa. Prior to the discovery of diamonds, and later of gold, the South African business was mainly carried on by Merchant Agents, who insured the buildings and stocks in the towns and in the up-country districts, and each Company's business largely depended upon the connections of its Agents. The commencement of the diamond industry did not greatly alter this state of things, but a great change was wrought by the discovery of gold in the Transvaal in the year of Queen Victoria's Golden Jubilee, 1887. It was then necessary to provide for the insurance of the heavy values concentrated in the various mining plants, and now many of the Companies have Branch Offices in one or other of the Colonies.

In the matter of Fire Insurance, the various Colonies have shewn themselves Protectionist to the extent of requiring a deposit from Fire Insurance Companies before they commence business. In Cape Colony the deposit is £10,000, in Natal £10,000, in the Transvaal Colony £5000, and in the Orange River Colony £5000.

An occurrence in Natal led the British Companies to insert a provision in the Policies exempting them from losses through fires caused by the Public Authorities. During an outbreak of cholera the Authorities were burning down some infected huts, and the fire spread to insured property. Those Companies which had not guarded themselves against such an

eventuality had to pay, but now all Companies have inserted a clause declaring themselves free from fires caused in that manner.

There are six Fire Insurance Associations in the South African Colonies. These Associations recently held a joint Conference, and will shortly have another, and when the resolutions of this Conference are fully incorporated in the Tariff it is to be confidently expected that considerable benefit will result to the Companies generally.

Recent events compel a short reference to the West. In Cuba during the Spanish regime a deposit was required from Companies which had not made a deposit in Spain. When Cuba was under American rule, and later when it became independent, the deposit was continued, and now amounts to £15,000 for each Company.

The British West Indies had an uneventful history for many years as regards Fire Insurance, varied occasionally by conflagrations on a moderate scale, but in January of this year we were all startled by the earthquake at Kingston. As, however, all the policies of British Companies exclude losses through fires caused by earthquake, the Offices are unanimous in their resolve not to admit liability for the damage done on this occasion. A similar resolve had previously been come to regarding the fires indubitably caused by the earthquake at Valparaíso, although it is probable that some losses which arose after the earthquake had ceased may have to be met.

A deposit of about £15,000 is required of any Company doing business in Chili, and of £5000 by any Company doing business in Mexico. In Brazil a few years ago the laws were so oppressive on Companies that most of those doing business there closed their agencies. This is a potent though expensive way of protesting against unfair legislation, and in most countries the threat of resort to it has a powerful effect on the Legislature.

We will now consider Fire business in the United States, and at the outset it is necessary to mention that, owing to a legal decision that Insurance is not Commerce, each of the 51 States and Territories has power to make its own laws regulating Insurance. The decision of the Supreme Court that Insurance is not Commerce was given in a case called "*Paul v. Virginia*," and I may remark that these are the names of

the actual litigants, and have no reference to the Paul and Virginia of the Romance by Bernardin de St. Pierre.

The first step towards doing business in the United States is to make the deposits required by the laws. These deposits are \$200,000 in New-York, \$50,000 in Oregon, \$10,000 in Georgia, \$10,000 in New Mexico, 5 per cent. of the Capital not exceeding \$50,000 in Virginia, \$100,000 in Ohio, but the total deposit is required by New-York law to amount to \$500,000 in all the States as a preliminary to commencing business.

On the 31st December of each year the Company has to deposit in the hands of Trustees a sum of money equal to the premium applicable to the unexpired period of each policy. Thus, on annual policies it has to deposit 50 per cent., on three years' policies 83 per cent., and on five years' policies 90 per cent. of the first year's premium, and smaller percentages in the later years. Fourteen of the States require policies to be worded in a Standard Form, and six of the 14 require their own particular Standard Form to be used. No less than 20 of the States provide for "Valued" policies being issued under certain conditions. For example, in California any insured can insist on having a valued policy on his building, provided he pays the expense of the valuation. In Georgia the valued policy law does not apply to stocks of goods and merchandise and other species of personal property changing in specifics and quantity by the usual customs of trade. Another State allows Companies to have two rates, one with average and one without. One State lays down that an Insurer can recover his whole loss from any one of the interested Companies. Two States lay down that it is illegal for the Companies to insure for more than 75 per cent. of the value of the property. All the States, except seven, require all policies on property in the State to be signed and issued by Agents resident in the State. In this way they ensure that they shall collect the taxes on the premiums. Eleven of the States prohibit an average clause in the policies. Seventeen of the States prohibit compacts among the Companies for settling rates. One of the States has a law that no higher rates shall be charged than were current on the 1st January, 1897. Two of the States allow Fire Prevention Bureaux to be established in order to make inspections and advise as to the value of improvements in

risks. Another State allows a Local Board to exist at each place for the purpose of making rates.

Seventeen of the States prohibit surplus risks being re-insured in Companies which are not themselves licensed to do business in the particular State.

All the States require each Company to file an annual statement regarding business in the United States, and some of them require a statement relating to the whole business of the Company. The annual charge for filing this Statement varies from \$5 to \$100.

Almost all the States require a License Fee to be paid for every Agent accepting risks in the State. The fee varies from \$2 to \$10. Again, almost all the States require the Companies to pay a tax on the premiums. This varies from 1 per cent. to 3 per cent. In addition, many Counties and Cities levy their own taxes for Fire Brigades.

It must not be supposed that the laws are entirely directed against the Companies. Almost all the States allow the Companies to cancel policies on giving five days' notice and returning the proportionate part of the premium for the unexpired term, while if the assured wishes to cancel his policy the Company can keep premium calculated on the Short-period Scale.

It will be remembered that President Roosevelt, on the occasion of his first re-election, expressed the view that Insurance was a matter which should be dealt with by Congress for the whole country and not left to each of the individual States. This view is constantly expressed by Senator Beveridge, a very eloquent lawyer, who takes the greatest and most sympathetic interest in insurance matters. I would like to read to you a few remarks of Senator Beveridge, because they show that in the United States, as in this country, the need for training of insurance men is admitted. He said it had been borne in upon him for many years, and he was sure much more borne in upon those who were conducting the great profession of Insurance (because it is a profession as well as a business) that men in the Insurance business must be carefully trained for their work. He said the time had gone by when, in this business, which more, perhaps, than in any other business directly affects the welfare and the prosperity of the homes of the people, anyone without any preparation, and depending

upon inspiration from nowhere at all, can properly or safely conduct the business either with relation to the people protected or to the Companies he represents. He showed that the need for preparation in the Insurance world is part of the universal intellectual movement which is requiring for all business of every kind greater preparation for its conduct. He remarked that business has ceased to be a sordid affair and has become a moral and intellectual affair, and he thought of no business was this so true as of the Insurance business, where so much technical knowledge of an actual character is absolutely required for its proper conduct. He added that one of the best signs of the times was the fact that four at least of the leading Universities had recognised that Insurance was not only a business but also a profession by establishing Chairs for instruction in it.

When we see such wide and up-to-date views expressed by a Statesman, we are not surprised at his going on to censure the existence of 50 different sets of laws, the diversity of which led to corresponding diversity in the security offered by the Companies belonging to the various States; and this led him on to advocate a uniform Policy. He said the Policies should not only be characterised by uniformity, but also by simplicity, the whole tendency of the business world in every branch being towards simplicity. He went on to praise the Insurance law enacted in the Capital District of Columbia through the influence of President Roosevelt, and wished that Congress would so legislate that this law should be applied to the whole country. He ridiculed the legal dictum that Insurance is not Inter-State Commerce, while the sending of telegrams and the disposal of lottery tickets are Inter-State Commerce.

The law of the District of Columbia does not lay down any Standard Policy form, and this leads me to remark that if a Standard Form is laid down by law its provisions should be simple and incapable of misinterpretation. An instance of unsatisfactory wording is seen in the New-York Standard Form, which was very generally in use in California. This form is silent as to losses by fires arising from earthquake, but it laid down that "if a building or any part thereof fall except as the result of fire, all insurance by this policy on such building or its contents shall immediately cease." This clause,

taken in its literal sense, would have relieved the Companies of practically the entire loss at San Francisco, and even if it is to be taken as meaning that the fall referred to is of a substantial part of the building it ought still to have relieved the Companies of the greater part of the loss. Unquestionably the Companies had received no premium for covering against fire arising from earthquake. I for one regret that greater unanimity did not prevail among the Offices. Had they stood together they might have made a much better settlement than was arrived at.

It is worth while observing the effect of the San Francisco conflagration on the official mind in California. One prominent official is credited with saying that he is not wholly satisfied with the New-York Standard Form, as he considers it gives too much advantage to the Companies. It is likely that the California Legislature, when it draws up a Policy Form, will eliminate the earthquake clause, and if this be done the Companies will probably seek to insert the clause as a rider. The Official in that case thinks that the rider ought to be printed in big type and red ink. But what may be the effect of the San Francisco earthquake upon the Policy Form must be left to the future to decide, and it should be interesting to have this Official's opinion upon the earthquake clause as lately drafted by the British Companies for Colonial and General Foreign risks.

I must now say a very few words regarding Loss Settlements. In their essence the loss settlements of all countries are very much alike. It is, however, more usual in Foreign countries than at home for the assured and the Company each to appoint a representative, and for these representatives to appoint an Umpire to act in case of difference. No doubt the more frequent resort to this mode of settlement in Foreign countries arises from the fact that in so many of them Fire Policies are all subject to *pro rata* average. One circumstance noted in the United States merits a word of notice. In many cases you will have noticed from the lists of fires published periodically in the "Policy Holder," that perhaps ten or a dozen Companies insure a risk. On the occurrence of a loss, especially in some of the inland States, it is not infrequent for ten or a dozen adjusters to meet in order to settle the loss.

I think I have now put before you sufficient data on which

to form that comparison which the Committee of the Federation has bidden us to make.

Possibly I am not required to institute the comparison at any great length, as there has been a running comparison throughout the paper, but I hope that some at least of the younger members of the Institute will make a comparison for themselves.

Comparison will establish similarity in some matters and dissimilarity in others. Notwithstanding the variety in Policy Forms, and in the nature and construction of risks, and in the variety of the hazards undertaken, there is one matter in which Companies of every nation and clime are similar, and that is in their dependence for their business on that "striking force" of the Insurance Companies—I mean, the Corps of Agents—and this remark applies alike to the Agent controlling a large territory, such as Mexico or the Transvaal, or his confrère, the Local Agent, in an English village or a small Dutch town. Of course, the responsibility of Agents varies greatly, as in Foreign countries the Agent must judge of the character of the proposer and of the hazard of the risk, and cannot in many cases refer to his Head Office.

In the matter of bookkeeping there is considerable variation in the customs of different countries, and we need not be surprised to find that in France the system of books is on a very convenient plan. In that country, where so many policies are issued for terms of years, the renewal register is written up for the whole period. If every policy be renewed the total of the column for the respective year shows the renewal premiums for that year. As policies are cancelled or dropped a similar cancelment register is established showing the deductions to be made for each year, and thus the debit for each year is established almost automatically.

I am under the impression that, whenever professional accountants are called in to advise regarding the accounts of English Insurance Companies, they advise that the renewal debit for a quarter should be established before the renewals commence to be paid, thus adopting in a minor degree the custom of France. This custom prevails in Belgium and some other Continental countries.

I believe I am correct in saying that the "Card" system of keeping records of Risks by Streets arose in France.

While talking of renewals, it is worth mentioning that in the United States policies are not renewed by receipt, but a new policy is issued whenever a risk is to be continued.

In regard to filing copies of policies, I have mentioned that in France an exact duplicate of the policy in size, print, and manuscript is kept in the Office. In the United States also, the copy of the policy is a smaller-sized document but identical in print and manuscript.

One very important point on which the usage of Foreign countries differs from that at home is the use of the *pro rata* average clause. Average is engrained in the customs of Marine Insurance, and is therefore familiar to the Mercantile Community, and especially in the Ports all over the world. As Fire Insurance was the child and successor of Marine Insurance, average easily became the custom in many countries. It did not become so in England until the Government, for the purpose of protecting the Revenue from Policy Duty, enacted that all Floating Policies should be subject to average. Of course, on the Policy Duty being abolished this enactment was not continued, and now average is to some extent at the discretion of the Companies. I was greatly pleased to read the remarks of the manager of the "Royal," as reported in the "Policy Holder" of the 27th February, to the effect that in this matter of average there is a movement in the right direction, and I cordially echo his hope that the younger members of the profession will help the movement forward as their responsibilities and influence increase.

I would suggest as a subject of investigation to be undertaken by someone in a Loss Department, working in collaboration with someone in a Classification Department, the following:—What degree of reduction in rate for a particular class of risk would be possible, with due regard to the interests of the Company, provided every insurance be made subject to full average?

A word must be said on the subject of plans. The large plans of towns with which we are familiar were first adopted in the United States, being the work of Hexamer and Sanborn. A similar work in Canada, commenced by our old friend Mr. Goad, spread to this and other countries, to the great advantage of all Companies, and now, I suppose, the name of Charles Goad is familiar to everyone in the Fire Insurance world.

My closing comparison shall be on the subject of Tariff. Whatever may be the form of the Tariff Association in any country, I am satisfied that nowhere will there be found an Association which so equitably adjusts its rates to the hazards involved in the particular class, and which has so little of the character or machinery of a Trust, as the Committee whose operations are directed to the business of this country and of those other lands included in the scope of the Fire Offices Committee.

In conclusion, I would say that, if I were asked to name the prominent features which distinguish Fire Insurance business in this country, I would point for one to the system of the classification of results, according to an identical plan by the great majority of the Companies; and for another, I would point to the operations and effect of the Tariff organisation.

Classification was fully dealt with by the Manager of the "Royal" in the address to which I have referred. It has furnished the Companies with adequate data for adjusting their rates, with due regard to the interests of their Shareholders as well as those of the insuring public. The due balance between these interests never fails to be established in the long run, and frees the Companies from all liability to be honestly reproached as exploiters of the public.

On the other subject, it may safely be said that the tariff organisation, while operating in a sphere in which competition is the soul of business, has caused that competition to be mitigated by reason and good feeling. These two qualities are fostered by the Insurance Institutes, and this is by no means the smallest of the claims of the Institutes to the approbation and support of everyone connected with our great business of Insurance.

PUBLIC FIRE EXTINGUISHING EQUIPMENT IN SCOTLAND.

By JAMES LAIRD (of Robert M'Tear & Co.),
Fire Loss Assessor, Edinburgh and Glasgow.

*A Paper read before the Insurance Institute of Edinburgh,
5th March, 1907.*

WAS it, I wonder, in the spirit of irony that our indefatigable Secretary sent me out to survey and make a report on the condition of the public fire brigades of Scotland—the standing enemies of the fire loss assessor? He, in his usual affable manner, not only suggested that I should read a paper before you, but he gave me at the same time its title and scope. The scope of the inquiry I have found to be a vast one. In order to give you all the information I desired would have required the backing and power of a Royal Commission. With the 208 Burgh Clerks of Scotland, I, in the beginning of last year, started a correspondence which, I may say, is not yet completed, and never will be. I set out with the intention of finding out the power for good and evil inherent in the burgh fire brigades. The power for evil of all extinguishing appliances to the fire assessor is enormous, as many a promising loss is thoughtlessly nipped in the bud. In some cases, however, where the supply of water is very good and the enthusiasm of the brigade admirable, a small fire loss is redeemed by the magnificent water damage, so taking the fire with the water I have been able to approach the subject with the earnest endeavour to give you all the information I have been able to collect.

On opening a correspondence with the authorities, I was met with various questions—What use is to be made of the information? What fees will be paid for the information?—and such like. In some cases I met with a point blank refusal to give any information to the Insurance Companies, far less to a member of that profession which has shown an inclination in the past to question the accounts for services rendered. Perhaps

Difficulty of
procuring
informa-
tion.

Refusal of
authorities.

some one with more tact and ability would have managed a better return, but I have used all my powers to lay before you a reliable statement. What there is you may take as trustworthy, as the particulars are vouched for by the firemaster or Burgh Clerk in most instances, with the tendency perhaps in a few cases to make the best appearance possible. In a number the information had to be procured from outside sources, but in these, I think, the details can be relied upon.

Purpose of
paper.

As the paper is, as I understand its purpose, to be useful for reference in the Office, the principal portion of it is the tabulated statement which accompanies it. The subject is by no means a dry one, but it is one mainly of statistics, which hardly lend themselves to interesting treatment on an occasion such as this.

Origin of
brigades.

With the historical side of the subject I will take practically nothing to do, as the histories of brigades are very similar. The inception of the brigade is the sudden awakening of the "City Fathers," probably a rude awakening, caused by some enormous blaze in the neighbourhood, to the necessity of having some local means of coping with an outbreak of fire, and the end of the brigade is the question of £. s. d., which means the raising of the rates, and this is an idea of such horror that the matter falls through time and again, and the burgh remains as it was, the enthusiasm cooling at about the same rate as the hot ashes of the alarming outbreak. In some of the burghs the handsome fire engine and apparatus have been magnanimously gifted by individual gentlemen or by several gentlemen. Two burghs at least absolutely glory in the idea of having no extinguishing appliances, giving as the reason that the Insurance Companies, when the subject was raised, refused to give a helping hand. Others have had appliances, but gave them up because the Insurance Companies would not assist financially.

Views on
brigade
upkeep.

The authorities, looking at the subject on the surface, believe the Insurance Companies to be the first to benefit by the fire brigade service, forgetting what a large loss by fire means in a burgh. It is not only a loss to the individuals most closely concerned, but to the whole burgh, by loss of employment to many of its citizens and perhaps the loss of a trade, which, once diverted to other quarters, is not easily drawn back again. On still broader lines, it is a loss to the nation. Mr. J. Allan

Cook, in his paper on "Fire Waste," writes:—"The subject is one for the community at large, and if one could but succeed in stirring up in the minds of our national and municipal authorities an interest in what I regard as a great problem in economic science, one would consider as well spent the time occupied."

To our forefathers we owe a debt of gratitude for most things, but we cannot thank them for the legacy they have left us in the impression still exceedingly hard to kill in the public mind, that Insurance Companies should contribute to the upkeep of fire brigades. The discussion is an old one, for it is on record that in 1812 the Fire Offices and the Glasgow Fire Brigade Board had differences on the question of a contribution to the expense of putting down fire-plugs. Before the principles were properly understood, the correct position to be maintained by the Insurance Companies in this matter had been surrendered. The late Mr. D. Deuchar wrote:—"It is all the fault of the unfortunate historical position of the matter, taken in connection with the non-existence of the F.O.C. in 1833 and the fact that the committee had not a competent lawyer as chairman between 1862 and 1865."

At the present day it is invariably with the utmost care that the Offices depart from their legal and sound position in their dealings, and rightly so, as it has been learned by experience that precedents are most strenuously grasped by their clients and the general public, and made the most of in future dealings. The Offices nowadays do most frequently and generously give way to their clients in many ways, but always with the proper reservation that the case is not to be founded on in future, and thus the principles underlying fire insurance proper are kept intact.

Unfortunately, with fire brigade upkeep a mistake has been made. We perhaps are not in a position to impute blame, but the difficulty has often had to be met in the past fifty years, and I am afraid the last has not been heard of the subject. As late as 1903, when the Act amending the 1892 Burgh Police (Scotland) Act was passed, an endeavour was made to insert a clause permitting all burghs to charge for the services of the fire brigade against the owner or occupier of the premises where a fire should break out. A Parliamentary Committee Report in 1900 on the condition of public fire extinguishing appliances

Reason of same.

Treatment of question now by Insurance Companies.

Parliamentary views of question.

in England and Wales condemns the local authorities on their apathy in many cases, but illogically recommends that the Insurance Companies should be called on to contribute to the upkeep of brigades, as they have "discontinued the practice of maintaining their own fire establishments."

Metropoli-
tan Fire
Brigade
Act.

This idea, so generally held by all classes, is undoubtedly due to some extent to the fact of the contributions given by the Offices annually to the support of the London Fire Brigade. By the Metropolitan Fire Brigade Act of 1865, what is now the London County Council took over the duty of extinguishing fires within the Metropolis, a duty which had previously been borne by the Insurance Companies. The latter handed over all their fire-engine establishments and property to the Metropolitan Board of Works (now the London County Council), and the Act levies an annual tax on the Insurance Companies and Lloyd's who insure in the Metropolis at the rate of £35 per million pounds insured. Owing to the increase of insurance the tax has more than trebled itself since then, and the total stands now at over £36,000. Attempts have been made since this Act came into force in 1866 to have the Insurance Companies' rate of contribution increased, but owing to the resistance offered by the Offices the attempts have failed.

England.

In the cases of Manchester, Liverpool, and Salford, the Insurance Companies have commuted their total liabilities for fixed annual payments, which come to be looked upon as contributions to the upkeep of these brigades. Ashton-under-Lyne, Newcastle-upon-Tyne, and Stockport have powers to charge for services within the boundaries as well as without. Oldham has no statutory power to charge for service within the boundary, but the Offices have agreed to a scale. One peculiar point about some of these special Acts is that the expenses are charged against the Insurance Companies covering insured property. As Bunyon says, these cases are remarkable "in that the Legislature has thrown burdens on a third or independent party by a private Act."

Ireland.

In Ireland, Belfast and Dublin have power to charge for attendance at fires within the boundaries, and six other towns try to recover charges, with more or less success.

Wrong
views of
Govern-
ment
authorities.

English and Irish cases are outside the scope of my subject, but I have made these references to them to point out the fact that the precedents have been dangerous, and have gone to

foster the wrong impression that Insurance Companies should contribute to the upkeep of fire brigades. Only a couple of months ago, in terms of the "Parish Fire Engines Act, 1898," which applies only to England, a city corporation offered on certain terms the services of their fire brigade, should occasion arise, to a neighbouring Parish Council. The Council replies—"The terms are too high, and *there is little property in the district which is not insured;*" therefore the offer was not accepted.

In reality it is no concern of the Insurance Companies to prevent or extinguish fires. It is logically no more their interest that fire waste should be prevented, further than it is the interest of all right-minded men to prevent waste because it is waste, but as underwriters it is not their business. Being experts, they grant to the general public the advantage of their special training to point out how fire waste can be prevented. The Insurance Companies are simply the medium through which premiums are collected and losses distributed where required, and when losses become greater than the average the premiums which the community at large pay must be increased accordingly. In the words of the late Mr. J. M. M'Candlish, "Fire Insurance does not aim, directly, at least, at the prevention of fires, and only deals in a secondary way even with the minimising of the risk of fire."

The arguments now put forward by the Insurance Companies in defence of their position are—that they have no control over the management of the brigades nor any power to control the expenditure, and those who pay should have such control; that the old Acts were permitted to pass without adequate protest, as the question was not properly understood then, and in the case of London the Companies desired to be rid of a burden which had been voluntarily undertaken by them, and which was becoming too large for their control; that allowances made by them are simply giving protection to the careless non-insurer at the expense of those who do insure, and the more efficient the brigade becomes the less instigation there is to insure; that the saving of imperilled life would naturally be the first object of a fire brigade, which is generally provided with escapes, and while the attention of the brigade was thus directed the property is allowed to burn (the London brigade life-saving branch costs about £20,000 per annum); that it is as logical to ask Burglary Insurance Companies to tax themselves for police pur-

Not the
duty of
Insurance
Companies.

Views of
Insurance
Companies.

poses, Life and Accident Companies for public health departments, and Marine Companies for lighthouses as to ask Fire Companies to tax themselves for fire brigades. All such services should be kept up by the communities, as both insured and uninsured are equally advantaged by them.

Opposing
contention.

The opposing contention is, that, if communities provide fire brigades, special insurance rates should be granted to them in proportion to the power and efficiency of the brigade. This at present is not done, but it would appear to me to be the tendency of present-day investigation all over the country, in Parliamentary as well as Insurance circles, to find out the efficiency of those brigades which do exist.

Premium
rating.

Scientific rating is in its infancy in this country, and I am convinced that fire brigades one day will form a term in the equation of fixing premiums. I expect to be told, as I have been told before, that efficient brigades are not a guarantee of small losses, and it is instanced that such towns as Glasgow, Aberdeen, and Dundee have good brigades, and yet disastrous outbreaks occur there. In answering, I have only to ask—What would these outbreaks have become had the brigades not been efficient? The logical conclusion to come to in the case of large cities, to my mind, is that the brigades are not large enough to deal with the city hazard. Mr. J. Allan Cook, on "Fire Waste," writes:—"It is the Fire Insurance Companies' bounden duty to so discriminate in the rates charged in favour of the town which enacts a high standard of building laws and provides the best system of fire fighting." The late Mr. Deuchar also said in this room:—"It might be proper and politic on the part of the Companies to introduce a distinction in the rating of towns according to the condition of their fire-extinguishing appliances and the efficiency of the brigade and the extent of their water supply." Again, in his work on "The Principles and Finance of Fire Insurance," Mr. F. Harcourt Kitchin writes:—"The most striking omissions from the British method of tariff rating are two. First, there is hardly any distinction between the fire hazard in various towns. In the British tariff there is no such thing as a standard city and no general computation of fire losses in different localities. Individual Offices do keep a very close watch on the hazardous character of the various towns and counties, and pay attention to the efficiency of fire-extinguishing appliances within the

areas, but there is no general application of the data thus acquired by all the Offices combined, except as regards the special and exceptional towns for which tariffs have been drawn up."

Now, such distinctions can be made, as evidenced by the American American Mercantile Schedule, which embodies as an important consideration the condition of efficiency of the fire brigade and water supply in the standard city. The schedule reads:—"A Standard city is one having gravitation waterworks with pressure sufficient at all hours to throw a good stream of water over five-storey buildings, and with the main supply pipe in duplicate, or with an intermediate storage reservoir. Water pipes and mains must not be less than six inches in diameter in the dwelling section, and not less than eight to ten or twelve inches in the mercantile section. There must be a paid fire department with twelve men to each steam fire engine, and not fewer than two steam fire engines to each square mile of compact portion of the city, or one steam fire engine to each 10,000 of population up to 500,000. There must be one hook and ladder truck to every four steamers, a fire alarm telegraph, &c."

The Standard city rate is increased 24 per cent. when water supply is not up to the requirements of the schedule, 8 per cent. if there is no fire marshal, and so on.

To carry the question of rating as regards various districts to a practical issue, the tabulated statement I have been able to prepare, although by no means as full as would be required, might form a basis for filling in more complete details. If a committee of this society were to be formed to draw up an exhaustive list of the requirements necessary, these details could in a short time be forthcoming, in the principal towns from branch officials of the Insurance Companies, and in the smaller burghs from local agents. Why should this society not take the initiative in this matter and make the information complete for the whole of Scotland? Edinburgh, with its past history of fire extinction, would be but carrying out its tradition of pioneer. Edinburgh has always been well ahead in the science of fire extinguishing, and still holds her place, proved by the fire record for the past years. Then, surely it is here that a record for Scotland should be prepared, and I make the practical suggestion for your consideration as to its feasibility.

Information
for rating.

**Advantages
to burghs**

Burghs given to advertising for holiday visitors would no doubt make strenuous efforts to procure a certificate to the effect that the local appliances were efficient, and then the advertisements might be seen—"Splendid fishing, golfing, boating, up-to-date fire brigade, to be seen at fire drill every Saturday afternoon."

**Public
Health Act,
1897.**

Coming now to the statutes relating to and controlling fire extinction in Scotland, the first to be noted is the Public Health (Scotland) Act, 1897, which (by incorporating the Waterworks Clauses Acts) provides that the water company shall, at the request of the town commissioners, fix fire-plugs at a distance from each other not greater than 100 yards (or, in cases of towns with special acts, at the authorised distance), at places most proper and convenient for supplying water for fire extinguishing. The company shall renew and keep the fire-plugs in order, and deposit a key at the fire station, or where appointed by town commissioners. The company shall fix up the public notices indicating the position of the plugs on any house or building. The cost of this provision is to be borne by the town commissioners. The water company must also supply a fire-plug and key at the request and expense of the owner or occupier of any work or manufactory. They must keep the pipes to which the plugs are attached at all times charged with water, at such a pressure as will make the water reach the top storey of the highest building unless prevented by frost, unusual drought, or other unavoidable cause, and shall allow all persons the use of the water for fire extinction without compensation. The penalty for not supplying sufficient water or fire-plugs as requested, during the time the rates have been paid or tendered, is £10 and 40s. per day to the town commissioners, and to every person who has paid or tendered the rate, for refusal or neglect, after notice in writing is given.

Damages.

In a court case, a person whose property was burned sued the water company for compensation on the plea of insufficient water supply. The applicant won his case, but lost on appeal, as the penalty was fixed in the Act, and the water company were not liable to pay compensation for the damage.

**Charges for
water.**

Of course, if water is taken for extinguishing fire in the premises of a person outside the water district, and who is not a ratepayer, then the water company are entitled to charge for the water used.

By this Act, the county authorities, under the Local Government Board for Scotland, have powers to lay down a water supply, or two or more local authorities may combine for this purpose. The costs in burghs under the Burgh Sewerage, Drainage, and Water Supply (Scotland) Act, 1901 (included in Burgh Police Act, 1903), must be borne by the sewer and water assessments themselves, which are not to exceed the rate of 4s. in the £ unless by authority of the Local Government Board. By the Public Health Act, county authorities are limited to 3s. Should the burgh commissioners decide to lay down a water supply, they may proceed either under the Burgh Act or Public Health Act.

The next statute to be referred to is the Burgh Police (Scotland) Act, 1892, amended 1903. This Act applies to burghs in Scotland, except five, viz.:—Edinburgh, Glasgow, Aberdeen, Dundee, and Greenock, but these five have powers to adopt it, in whole or in part, at any time. In the other burghs, royal, parliamentary, municipal, or police, the Act applies in its entirety, and no permission is granted for adopting it in part. A burgh by the Act must be formed by the Sheriff in any populous place where there is a requisite majority of the householders in favour of it.

The Act regulates the width of new streets to be formed, authorises the commissioners to contract with water companies or other parties for water supply, plugs, &c. (as already indicated in reference to the Public Health Act), or to construct or lay down a water supply for the burgh, provided the existing water companies or contractors for the district are unable or unwilling to fulfil the requirements, and notice has been duly given to them of these requirements.

Under the Act, it is worth noting that it is lawful for the commissioners, when there is a surplus of water, after providing the ordinary requirements of the burgh, to dispose of same to harbour trustees for supplying vessels within the harbour, and for the extinction of fires in such vessels, or in buildings within the limits of the harbour, for a reasonable sum of money. Other parties can be supplied only by special agreement with the commissioners. From this it can be seen that persons who do not pay the water rates and are outside the water district cannot demand a supply of water when fire breaks out, unless an agreement has been come to with the commissioners previously.

Ample
powers for
water
supply.

There appear to be quite ample powers given to all authorities for efficient water supply, the primary essential in fire extinguishing, and many localities have special Acts pertaining to same.

Chimney
fires.

The Act authorises penalties against any person who wilfully sets a chimney used by him on fire, or who cannot prove satisfactorily that such fire was not due to omission, neglect, or carelessness, on the part of himself or servants, and he is liable for the expenses of extinguishing such a fire as shall be fixed by the magistrate.

Appliances
purchase.

By Section 291, the commissioners may purchase engines for extinguishing fire, buckets, pipes and appurtenances, fire-escapes, and other implements of safety, and may purchase, keep, or hire horses for the engines, and may build or hire places for keeping the engines, &c., and may employ persons to act as firemen to be named the fire brigade, and may appoint a firemaster, who may be the chief constable, and may provide dwellings for the men, and make such rules and pay such salaries as they think fit.

Powers in
Act.

Section 292 allows the Commissioners to put up plates showing plugs or fire-alarms, and to lay down plugs in any public or private footpath or street, and to attach telephone or telegraph wires necessary for the working of the fire establishment to any land or heritage without paying compensation, provided the wires are not used in contravention of the privileges of the Postmaster-General.

Powers of
brigade.

The fire brigade may enter or break into any building on fire, or adjoining same, and may do all such acts as they deem necessary for extinguishing fire, and any damage done in exercising these powers shall be deemed damage by fire. The drinking of the stock-in-trade of a publican and the smoking of the stock of a tobacconist by a fire brigade have been held not to be damage by fire within the meaning of the Act.

Firemaster
and arson.

The senior officer of the brigade shall have sole charge and control of all operations for extinction of fire, dealing with water supply, and closing off temporarily streets or passages. When requested by the Council to do so, or on receipt of a special written report by the firemaster that suspicion of wilful fire-raising exists, the burgh prosecutor shall examine all parties supposed by him to be able to give information, but parties suspected of wilful fire-raising shall not be bound to give evidence, or be examined.

The police may retain possession of premises where a fire has occurred for twenty-four hours after the fire has been reported to the burgh prosecutor. Police and arson.

Although outside the sphere of this paper, it is interesting to note that the Act says, "no external covering of any roof shall be constructed of combustible materials, and it shall not be lawful for the owner of any building having, at the date when this Act comes into operation, a roof covered with thatch . . . and contiguous or adjoining any other building to suffer such . . . to remain for a longer period than seven years thereafter, unless with the consent in writing of the commissioners." Roof coverings

The weak point of the Act is that the providing of fire-extinguishing appliances is left to the discretion of the commissioners, as it says they *may* provide, instead of they *must*. Unfortunately, they do not always realise their responsibilities, and prefer to read the Act as also saying they *may not* provide. Weakness of Act.

The five burghs excluded from the Act have each special Acts, which grant the same powers, the only practical difference being that they give special powers of charging expenses within the burghs in the cases of Glasgow, Aberdeen, Dundee, and Greenock, which point I will allude to later. Burghs excluded from Act.

There are no powers given to county authorities by law in Scotland to do more than supply fire-plugs. They cannot form brigades or purchase appliances out of the rates, which surely calls for amendment. County authorities.

Another advantage would be if all fire brigade legislation were to be drawn together into one statute, which would simplify matters considerably. Fire brigade legislation.

I have given as briefly as possible the powers conferred by law on burgh authorities, and will now endeavour to detail the provision which should be made for fire fighting by all governing authorities, and then give an abstract of how matters stand at present so far as appliances are concerned. Provisions to be made.

The first essential is a good water supply, giving sufficient pressure at all hours of the day and night. As a general rule, in Scotland, there should be no dearth of water, with ordinary foresight and engineering skill, but as fire fighting requires a very small percentage compared with the quantity annually used for domestic and manufacturing purposes, it is often left out of the calculation altogether, and inadequate mains and Essentials of good system.

reservoirs are put down to supply the sudden call made for strong maintained pressure at a given point. The reservoirs (and there should be more than one) must be of sufficient dimensions to prevent shortage at any time. It is peculiar how often a serious fire occurs at such times, or perhaps the serious fire is but the proof that the water was short. Many burghs report that the pressure is good, and that water can be at all times thrown over the highest buildings without the use of an engine.

Water
mains.

The minimum pipe laid down should be 4 inches in diameter, with a *working* pressure at all hours of 60lbs. per square inch. The returns made to me, I expect, are for the most part the standing pressures, and could not be maintained when the hose pipes get to work for any time. Sixty pounds per square inch in a 4-inch main would permit two jets capable of reaching the top of a three-storey building with some penetrating force. Smaller pipes are inadequate, and corrosion, I am told, increases in more rapid proportion the smaller the pipe is. If pressure cannot be got, an engine of modern manufacture should be procured, and a better supply than a 4-inch main would likely give would be necessary, and a larger main should be put down. A system of valves is required, whereby the whole supply is able to be centralised at the point required. This is especially necessary during the day time, when a general call is being made by the whole district.

Hydrants.

The hydrants should not be more than 100 yards apart, and should be kept in good condition, and frequently inspected. The canvas hose pipe causes considerable friction, and thereby loss of pressure, therefore the nearer the hydrants the less extent of hose required, and the pressure is preserved.

Hose.

At least 400 feet of canvas hose should be kept in good order and condition, and always carefully dried after use.

Alarms.

Whatever appliances and water are available, these are rendered of little use unless an efficient method of calling the brigade quickly by means of alarms and bells is instituted.

Minimum.

This, I should say, is the minimum in material that any burgh should possess.

Personnel.

As to personnel, the brigade should be composed of not less than seven men, and in the majority of burghs the "retained" system is the only practical one, i.e., the men are paid a retaining fee of two to five guineas per annum, for which they

must turn out to a certain number of drills, and are bound to attend when the fire alarm is sounded. Practical tradesmen, probably accustomed for the most part to building work, are usually employed. In some cases, the firemaster has been trained in a regular city brigade for some time, and this is a distinct advantage. The men are usually paid a wage by the hour according to their ratings for the time employed at a fire. In addition to those "retained," it will sometimes be required to engage a number of assistants or supernumeraries, and when a manual engine is used as many as twenty men for pumping alone are often needed; these, however, are not usually selected men, but are generally those easily found at all outbreaks of fire, "willing to help." It is quite refreshing to see the eagerness and bustling anxiety to be very busy of many at a village fire, trying to render assistance to a neighbour in affliction, if he is insured, and a notable peculiarity is the number of persons who persist in attending these functions in their very best wearing apparel.

The rules and regulations of many "retained" brigades are Rules. very full and explicit, and the members on joining must sign these, and are liable to be called upon to be questioned about them at any time. The alarm is often the ringing of the town bell, and the men's houses are connected with the police station by electric bells. These electric bells are in some cases rung daily at an appointed time to prove that the connections are in order. Should the daily ring not occur, the failure is reported. When any man has occasion to leave the burgh he has to give a specified time notice and report himself on his return. On leaving the service or discharge a month's notice is required on both sides, except in the case of disobedience of orders or misbehaviour, when instant dismissal is provided for. The men must all know the position of the fire-plugs, and these plugs have to be inspected monthly and reported on in writing. The members must reside close to the fire station and have the word "Fireman" printed over their doors. Regulations are laid down as to where the keys of the engine-house are to be kept and in whose possession. When at a fire, orders are placed upon the men as to being civil and not losing their temper or giving offence by their behaviour, also as to entering buildings on fire, and such like. The firemaster or engineer has to keep appliances in thorough order always, and the fire-

master or his lieutenant is given extensive powers in terms of the Burgh Act. On the brigade being summoned to leave the burgh and go outside the boundary, it is often required that a number of men should remain on duty at the fire station, and in case of an outbreak in the burgh the brigade is liable to be recalled. Before the brigade leaves the burgh it is often necessary for the person requiring its services to guarantee the expenses.

Carrying
out of rules.

These are examples of the style of rules laid down, and, like all such rules applicable to organising men, they will work well if systematically practised in an earnest and careful manner. It depends largely on the firemaster whether his men are useful or worse than useless. Regular drills and careful organising make some of these brigades perfectly trustworthy for coping with fires of any extent within the bounds of probability in their districts. The speed of the turn-out and the ability of each man to do his own work smartly and precisely are the main considerations, and are only to be procured by frequent drills, carried out by intelligent men. Certainly the organisation breaks down woefully at times in some cases—men not knowing where plugs are; rotten hose-pipes leaking or bursting, owing to not being taken care of and dried after use; men not knowing which end to try to couple to the hydrant; water turned off, and the man with the key away from home. These cause miserable failures at times, but the remedy is apparent.

Regular
firemaster.

In some burghs with "retained" brigades the firemaster is a regular, and is employed solely in keeping the appliances, &c., in order.

"Retained"
brigades.

The "retained" brigade is what is found in the large majority of the burghs in Scotland, and is kept up by the rates.

Premium
rating.

I can see considerable difficulty in endeavouring to rate in premiums the value of the personnel in these brigades, and fully recognise the fact that up-to-date appliances may only form the minor consideration. However, reductions in premiums are given when private works brigades are kept up, and the same argument might be applied to them.

Principles
of good
brigade.

The late Firemaster Paterson, of Glasgow, tabulates the principles necessary for a good fire brigade as follows:—

1. The rapid transmission of all alarms.
2. Means of turning out quickly and the speedy conveyance of men and plant.

3. Good supply of water and ample means of drawing it
4. Simple and ready means of connecting with the water supply.
5. Force of well-disciplined and reliable men with experience.

Nos. 1 to 4 could all be rated in premiums easily, but No. 5 would probably be more difficult to judge.

Regular brigades are those such as Edinburgh, Glasgow, &c., ^{Regular brigades.} where the men are skilled firemen wholly employed in coping with outbreaks.

Volunteer brigades are those made up of men who may be ^{Volunteers.} paid a retaining fee or not, but where the expenses are liquidated by voluntary subscriptions, and under this head come the County Council and Parish Council brigades. I know of only two County brigades, which are stationed in Larbert and Perth, and one or two Parish Council brigades, but of these latter I have not been able to procure reliable information. There are, of course, many well-equipped private brigades which do yeoman service often, but these are outside my subject.

May I refer you now to the schedule I have placed in your ^{Tabular statement.} hands,* and explain that in preparing same I tried to strike the happy medium of getting the most important information without damaging the chances of returns being made on account of asking too much. A useful column might have been the rateable value of the property in each burgh, as in some cases this might be a surer guide as to its importance. This information, however, is easily obtainable from any almanack. The names of the principal makers of the engines are Messrs. Shand, Mason & Co., and Messrs. Merryweather & Sons, and I have used contractions to indicate these firms. Under "Horses" and "Water Supply"—"Y" means "Yes," and "N" "No." The distances of the hydrants apart, the diameter of the water mains, and the water pressures vary considerably in the different parts of a burgh, and these columns can only be useful as indications of the general state. The other columns speak, I think, for themselves. In the "Remarks" column I have endeavoured to retain the words used by those who supplied the information.

* See after page 184.

Abstract. Abstracting the returns, we find of 204 burghs there are:—

Burghs.	Population.	No Appliances.	Hose only.	Manual Engine.	Steam Engine.
62	under 2,000	27	25	9	1
67	2,000/5,000	7	34	21	5
35	5,000/10,000	1	21	10	3
22	10,000/25,000	0	9	7	6
9	50,000/100,000	0	1	6	2
9	over 100,000	0	0	0	9

204

Extinguishing expenses. Turning to what we are all interested in, and of which most of us have had some experience, the charges, we find in the Burgh Police (Scotland) Act, 1892/1903, that "The commissioners or the firemaster may use such engines with their appurtenances, and the said firemen, beyond the boundaries of the burgh, for extinguishing fire in the neighbourhood of the burgh; and the owner, or, if the commissioners think fit, the occupier of the premises where such fire shall have happened, shall in such case defray the actual expense which may be thereby incurred, and shall also pay to the commissioners a reasonable charge for the use of such engines, with their appurtenances, and for the attendance of such firemen." The Sheriff to decide any disputes between parties.

Special powers. Power is given by this Act to burghs to charge for fire brigade services without the boundary, and legal authorities and decisions agree that burghs have no power to charge within the boundary excepting Glasgow, Aberdeen, Dundee, and Greenock, in which cases there are special Acts, permitting a charge of £15, or whatever less sum is equal to half the expenses. In these burghs it would appear that an account for this sum can be charged against the occupier or owner of every premises to which the fire spreads.

Outside boundary expenses. When service is rendered by brigades outside a burgh boundary, all burghs have power to charge the full outlay incurred, including a sum for the use of the appliances. The special Act burghs aforesaid charge 25 per cent., and Greenock 50 per cent., in addition to the account for tear and wear, which they are authorised to do. Edinburgh is also excluded from the general Act, and has a special Act, but does not charge for services within the boundary, and adds to the whole expense of services outside the boundary 50 per cent. for tear and wear.

Notwithstanding these exceptions, I think the powers conferred on burgh authorities in Scotland are generally more clearly defined than in the case of either England or Ireland, and the Insurance Companies can congratulate themselves on the manner they have succeeded in keeping the issues clearly marked by their steadfast refusal to make payments to burgh authorities for the services of the brigades within the boundaries, always excepting the four burghs having special powers.

When empowered to make a charge, the commissioners (or the firemaster) can proceed against either the owner or the occupier of the premises where a fire has happened. It is not of any importance who sent for the brigade, and, according to a judgment given in 1885, the proper course to adopt is to charge the account against all parties interested conjointly and severally, or against the owner and occupier, *pro rata*, on their respective interests. Should a case arise when a brigade proceeded to a fire without the sanction of either the occupier or owner, it would be necessary for them, if they refused to meet the account, to prove that the procedure of the brigade had been an improper act, and if there had been any fire whatever their chances of proving their contention would be remote.

On an occasion when one burgh asks for assistance from a neighbouring burgh to extinguish an outbreak within the boundary of the former, the latter are entitled to charge their expenses; but against whom? The spirit of the Police Act would say against the burgh commissioners who asked for assistance, probably through their firemaster, but the wording of the Act only provides for the assisting brigade charging against the owner or occupier. The owner or occupier might refuse logically to pay such a charge as being within the boundary of a burgh to the commissioners of which he had paid rates for fire protection. Were we to carry the case to an extreme, the burgh commissioners would be able to get behind the Act altogether by having no brigade and always sending to an adjoining burgh in case of fire, thereby throwing the expense of brigade upkeep on to the Insurance Companies indirectly.

The wording of the Act says that the charges to be made are the actual expense incurred, and a reasonable charge for the use of appurtenances and for the attendance of the men. The different ways of making up accounts are too numerous to mention, but you may study these at your leisure from the examples given. Should these examples get into the hands of

some of the more moderate-charging burghs it may open up to them a source of revenue hitherto undreamt of.

Methods of charging.

The usual method adopted is, at so much per hour for the use of the appliances, and for the men according to their ratings. The time counts from when the brigade leaves the station until its arrival back again, some time extra being allowed to the men for cleaning the apparatus. In some cases one or more men are left at the station on duty while the brigade is out, and these men are also charged for, but I am afraid the charge is one that could be successfully appealed against.

Differences of charges.

There is a considerable range allowed to the commissioners under the wording of the Act—viz., “A reasonable charge”—and the range is taken full advantage of, as the following examples will show:—

No. 171 Perth 320 gall. Steamer 25s. fee regardless of time employed.

No. 92 Grangemouth 600 „ „ 100s. „
and Perth charges 2s. per hour per man, and Grangemouth charges 3s. first hour per man and 1s. every hour afterwards.

Further—

No. 79 Falkirk 140 gall. Manual 42s. fee regardless of time.

No. 28 Bridge of Allan 140 „ „ 100s. first hour, and 40s. second hour, and 20s. every hour after; and Falkirk charges 5s. first hour per man and 2s. after, and Bridge of Allan charges 2s. first hour per man and 1s. 6d. after.

Tabular statement.

If you look at the tabulated statement of charges, I would explain that the rates are given in shillings, and as these usually differ for the first few hours a special column is given to the first, second, and third hours, and the “Every Other” heading is the rate for the succeeding hours. Referring to No. 11, you find the appliances are charged 200s. regardless of the time employed, whether it be one hour or ten hours, and therefore in the fourth column a “0” is placed. In No. 5, 50s. is charged for the first hour and 10s. for the second, third, and following hours, but the amount is carried at once to the general or “Every Other” column. Under the column “Horses,” “Per account” means that the horses are hired for the occasion and the jobmaster’s account is charged.

With these explanations, I hope you will find the table speaks for itself.

The actual expense incurred, as the Act reads, is taken by Over-charging. some authorities to include any damage to the hired horses on the road to or from the fire, damage to hose and appliances, and refreshments to the men. Some years ago a brigade was summoned to a farm, and after the outbreak was extinguished the hose was hung in the barn to dry, and a van was to be sent for it the following day. During the night the barn was burned down, and the hose was destroyed, when an account for about £80 was rendered for the loss, as part of the services rendered, I suppose. For refreshments, one brigade of fourteen men consumed nine bottles of whisky, seventy-two pints of beer, 22s. 6d. worth of bread and cheese, and the cost was charged of a trap and pair of horses to convey the refreshments eight miles. This case was heard in the Sheriff Court, when it dismissed, the Sheriff remarking that no authority had been given for the refreshments being supplied, and that in the case of the employment of an ordinary tradesman, had it ever been heard that, in addition to paying the contract price for the work, the party employing him should be called upon to pay also for whatever refreshments he might think were necessary? Another burgh calmly charges £24 10s. for cleaning the apparatus, employing the whole brigade fifteen hours, whereas the cost should have been 24s. 6d.

These are extreme cases, but they illustrate the position of Value of brigade services. affairs. It cannot but be admitted that in most instances the attendance of brigades outside the burgh boundaries is of valuable importance to the Insurance Companies and others, and the authorities are entitled to be well paid for the services of the brigades, but in a number of cases the accounts are over-charged. Should any demur be made as to the amount, the threat is often used that in future the brigade will not again go beyond the boundary unless the account is met in full, although generally the threat is an empty one, as the loss of this source of income will not be lightly thrown away, and the men of the brigade are only too well pleased to be paid at the rates they receive to be willing to forego the occasional run into the country. These remarks, of course, apply to "retained" brigades.

Volunteer brigades in Scotland have no power to charge for Volunteers. attendance at fires, but the accounts are usually paid, and this

is probably as it should be until the County authorities have powers to levy rates for the upkeep, which powers, I think, ought to be given them, as it must be remembered there are many populous places in Scotland with a larger number of inhabitants and of greater rateable value than many of the moderate-sized burghs, and which are under the control of County Councils, and this large value in property is entirely without fire protection of any kind.

Apportion-
ing extin-
guishing
expenses.

One more difficulty in dealing with brigade accounts is the allocating of the proportions to be paid by the proprietor of the buildings and by the tenant or owner of the contents. The practice among the Insurance Companies varies in different districts, the custom in England differing from that in Scotland, and the West of Scotland differing from the East. Sometimes the apportionment is made *pro rata* on the amounts of the policies, sometimes on the values at risk, and sometimes *pro rata* on building insurances and values at risk of the contents or stock. This leaves open a fine field for the Assessors, who can find as large a range in the word "reasonable" as the burgh commissioners ever could.

Progress to
be made.

The lines of progress to be followed in the organising of public fire brigades in Scotland, I consider, should be:—

- 1st. One uniform method of apportionment of extinguishing expenses among the Insurance Companies so long as there are expenses.
- 2nd. Scales of charges, if such to continue, to be made uniform.
- 3rd. Differentiation of premium rates in accordance with efficiency of brigades.
- 4th. Powers to be given to all local government authorities to assess for fire brigades and provide same in their own districts, or contract with burghs therein to send their brigades to county fires, the expense of same to be met out of the rates, and thus entire relief from a brigade account to be given to the poor unfortunate who has a fire.

It is with pleasure that I thank the Town-Clerks, Burgh Surveyors, and Firemasters for the courtesy I experienced at their hands, for the great trouble many of them took, and for the kind offer I received from a large number to give me any further assistance in their power.

Distance Apart
in Yards.

At one
At 50

At 50

At 50

At 100

At 100

At 100

At 100

At 100

At 100

At 120

At 120

At 200

At 200

At 300

At 300

At 70

At 70

At 70

At 70

At 70

At 70

At 100

At 100

At 100

At 100

At 100

At 100

At 100

Appoi
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Reference No.		Hydrants—Average Distance Apart
31	BUCK	10
32	BURG	
33	BURN	50
34	CALL	
35	CAMP	
36	CARN	
37	CAST	1
38	CHAR	
39	CLYD	
40	COAT	
41	COCK	
42	COLD	
43	COVE	
44	COWI	50
45	CRAI	
46	CRIE	1
47	CROM	
48	CULL	
49	CULR	
50	CUMN	
51	COUP	
52	CUPA	
53	DALE	
54	DALE	
55	DARV	
56	DENT	
57	DING	
58	DOLF	
59	DORM	
60	DOU	
61	DUFF	
62	DUM	3
63	DUM	5
64	DUN	
65	DUN	
66	DUN	
67	DUN	
68	DUN	
68	DUN	14
70	DUN	



	Distance Apart in Yards.	Diam. of Pipes
DYS ⁴⁰	4	
EAS ⁻		
EDI ¹⁷⁰	3/2	
ELG ¹⁰⁰	3/1	
ELI ¹⁰	4	
ELI ¹⁰	3	
EYE ¹⁰⁰	4	
FAL ⁻		
FAL ¹⁵⁰	3	
FOR ⁸⁰	3/1	
FOR ¹⁰⁰	3/1	
FOR ⁻		
FOR ¹⁰⁰	4/1	
FRA ¹⁰⁰	3/1	
GAT ¹⁰⁰	2	
GAT ¹⁰	3/1	
GAT ¹⁰	3/1	
GIR ¹⁰	3/1	
GLA ¹⁰	3/1	
GOU ¹⁰	3/1	
GOV ¹⁰	4/1	
GR ^{ous}	Vic	
GR ¹⁰	2	
GR ¹⁰		
HAI ²⁵⁰	2/1	
HAI ^{ous}		
HAI ⁶⁰	3/1	
HED ¹⁰	2 1/2	
HUI ⁵⁰	2 1/2	
INN ¹⁰	2 1/2	
INN ⁻		
INV ¹⁰		
INV ¹⁰⁰		
INV ^{ous}		
INV ^{OC}	4/1	



2.

Distance Apart
in Yards.

0/100

80

rior
-

150
70

100

0/100
0/50

70

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0/100
00

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50

-

0/13
0/18

50

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70

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300

100
60

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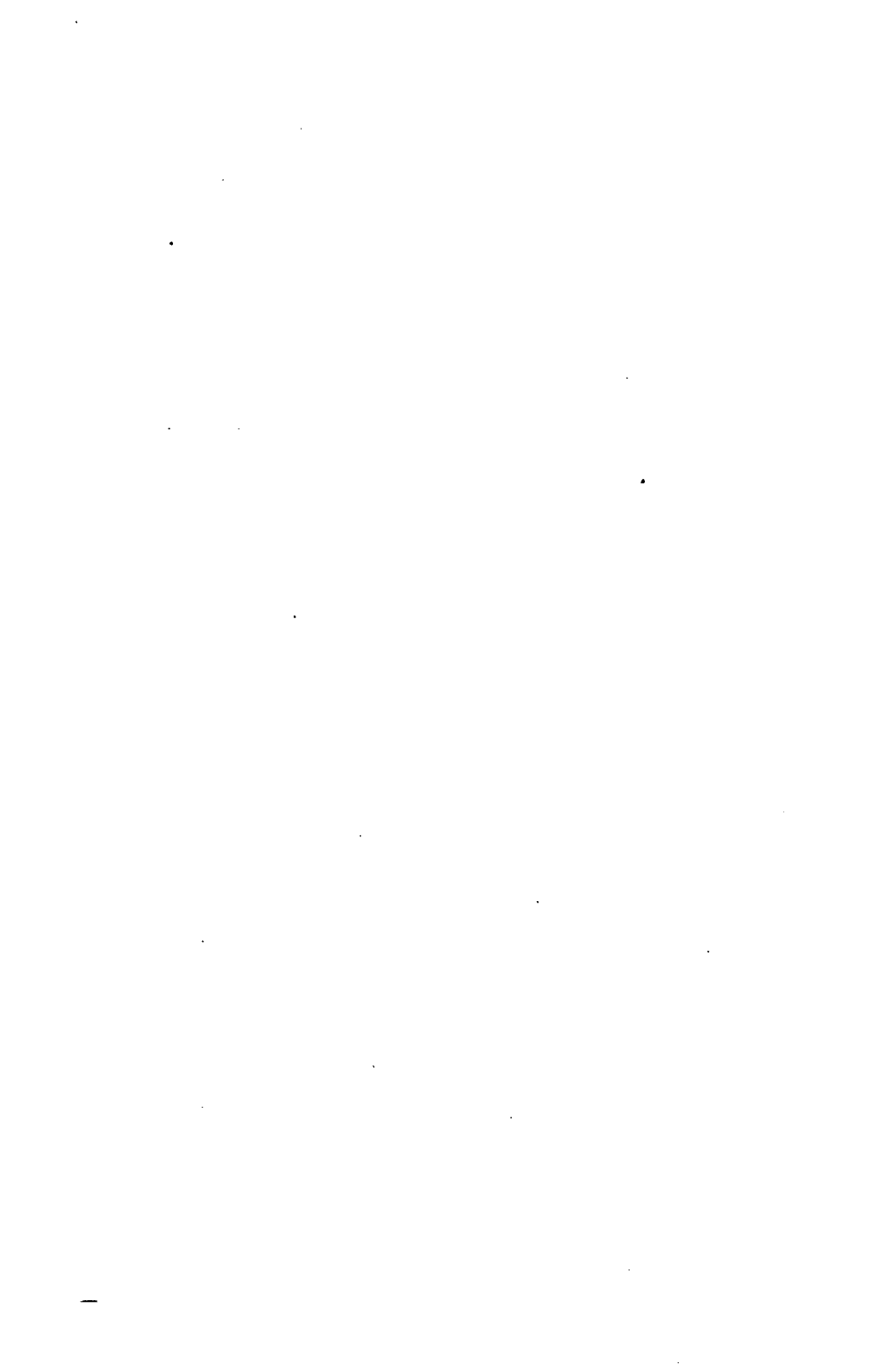
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200
100



	in Yards.	Diam. of Pipes in inches.
MA ^{us}	3/6	
MA ⁰	3	
ME ⁰	2 1/2	
ME	-	
MI ⁰	3/7	
MI	-	
MO ^{us}	3/6	
MO ⁸⁰	3	
MO	4/1	
MO	3/1	
MU ⁰	3	
NA ⁰	2	
NE	-	
NE ⁰	3	
NE ⁰	4/1	
NE ⁰	2/1	
NO	2/1	
OB ^{us}	2/1	
OL	-	
PA ^{us}	4/1	
PA ⁰	4/1	
PE ⁵⁰	2	
PE ⁰	2	
PE ⁰⁰	3	
PE		
PE ⁰	2	
PI ⁰	2	
PG ⁵⁰		
PG		
PG		
PG ⁰		
PI		

Hydrants - Average Distance Apart
1
2
3
4
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7
8
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18
19
20
21
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100



Reference No.

r.

du nuur.

2 AB

3 AB
5 AH

6 AL

11 AB
15 AU16 AY
24 BL27 BR
28 BR
37 CA39 CL
40 CO
42 CO

46 CR

50 CU
52 CU53 DA
54 DA
55 DA
56 DE
57 DI
53 DU
55 DU

6 DU

7 DU
1 DY
3 EDEL
FA
FO
FO
GA

GA

GL

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31

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BRASS FOUNDERS.

By W. J. MUMFORD,
Sun Insurance Office, Birmingham.

*A Paper read before the Insurance Institute of Birmingham,
26th April, 1907.*

IN preparing this paper I have confined myself to the general Brass Trade, making a note, however, in passing, that in many chandelier and brassfounders' works copper is very similarly treated to the brass, and is therefore included when referring to the various factory processes. I have, however, been careful not to wander off into the many by-ways of the brass trade, as by doing so I have found that I should soon be landed in a maze of manufactures separate and distinct from brass, although sometimes carried on in conjunction with it. I have therefore endeavoured to give you a general outline of the work necessary for the manufacture of any brass or copper article, whether it be intended to form part of a bedstead, lamp, chandelier, lock, electrical or other fitting, or to be used as a separate and complete article, and this, I think, will save a good deal of repetition, which would otherwise be necessary if I individualised the various trades.

The metal to which we are about to give our attention is, as you all know, an alloy formed by fusing together copper and zinc; the copper, requiring 1996 degrees of heat to melt, is fused first, and the zinc, which only requires 773 degrees, is afterwards introduced. The formula, for good ordinary brass, is a mixture of 16oz. of copper to 8oz. of zinc, or 2 of copper to 1 of zinc. What is known as gun-metal or bronze contains tin instead of, or in addition to, zinc. The metal, as a rule, comes to the brassfounder ready mixed from the metal manufacturer, and I am assuming that in the workshops I am bringing before your notice metal is brought either in ingots for casting or in bars or sheets from the metal manufacturer, who carries on quite a separate trade from the brassfounder. I may say, however, that there is very little hazard connected with the

manufacture and rolling of brass, provided the furnaces are secure. I am also assuming that tubes come complete from the tube mill, either as solid drawn tubes or as cased tubes (*i.e.*, iron tubes covered with sheet brass), as tube-making also is quite a separate and distinct trade from the brassfounder's.

The brass trade may be roughly divided into two classes—viz., No. 1, articles and fittings made from solid metal, that is to say, either by casting or brassfounding proper or by cutting out of the solid bar, and No. 2, articles and fittings made from the rolled sheet-metal.

SOLID BRASSWORK.

Castings, Patterns, &c.

Casting or true founding of brass is our first process, and this is generally carried on in one storey buildings, often divided into small shops, each having one or more pairs of furnaces sunk below the level of the floor, and containing the small earthenware crucibles in which the metal is melted.

The furnaces must be carefully built and the flues carried well away from woodwork, owing to the great heat required. Casting should be done in a one storey building, owing to the unpleasant and injurious vapour given off by the metal; there is also always a danger of the flues becoming cracked and imperfect, where carried through floors and roof or passing near combustible material. Brass melts at about 1800 degrees, which gives some idea of the great heat which must always be kept up in the furnace. Unfortunately, the manufacturer is often pressed for room, and these small but very hot furnaces are fixed in storeyed buildings, and old chimney flues are also occasionally patched up and utilised for the brass furnace. This arrangement of an old flue is never safe, and should not be allowed. Occasionally one finds a brassfounder mixing part of his metal for special purposes, which necessitates the melting of pure copper. In this case, the greatest care as to the construction of the flue must be taken, owing to the high temperature required, the fusing point of copper being nearly 2000 degrees. Flues passing through storeyed buildings should never be allowed for a copper melting furnace. There have

been several small and one serious fire, to my knowledge, the result of using flues unsuitable for the intense heat.

Sand cores are made and used for the hollow sections of the castings, and these are placed on boards to dry, either over or near the flues. Small losses often occur through the boards becoming ignited.

Most of the patterns for small castings are made of metal (chiefly lead mixed with a somewhat harder metal), and are not individually worth very much, but a brass foundry of any size contains an enormous number of these small patterns, often several thousands.

One can picture some difficulty in the settlement of a pattern loss in these risks, especially if no proper pattern register is kept. I was told by a manufacturer a few months ago that many thousands of lead patterns were reduced by fire to a solid mass in the pattern store. Many, of course, were obsolete and of no value, but occasionally they were required for repeat orders, and were therefore kept. Some patterns I saw the other day were being used for a repeat order after resting on the shelves for fifteen years. The casting boxes are nearly always of metal, and where castings of a standard pattern are made, impressions are made in plaster of paris, and the box can in this case be used over and over again.

The fire risk from casting in one-storey buildings is small, provided the flues are kept in good order and the core boards properly looked after. Casting is very often carried on as a separate and distinct trade. The rough castings are usually placed in a revolving barrel with sand, and are thus dressed and partly polished. Others go forward direct to the workshop and are either ground on stones or emery wheels or emery bands, or are filed up by hand. The casting is then ready for the machine shop.

The Machine Shop.

In dealing with the machine shop and general workshop, I propose dividing the work into the two sections above mentioned—namely, that relating to solid brasswork made from castings or solid bars and that relating to articles and fittings made from sheet metal.

The casting is taken to the drill, turning lathe, or screwing machine, according to its requirements, or is finished by hand,

and I may say that much of the work on castings is done by hand. The machine tools are rather light metal working machines, and require no special comment. When, however, fittings are made from solid bars the automatic lathe is generally used. This machine, as you all know, is one of the most wonderful of modern inventions as a labour saving apparatus, and, like others of its class, has been introduced from America. For turning out fittings of a standard pattern it has, of course, no equal as regards speed of production. The end of a solid bar is placed in the machine, and the tools are fixed in a chuck, or circular plate, which allows each tool in its proper order to be driven singly and do its work, either in the way of turning, drilling, cutting, or screwing. The chuck turns automatically to the next tool, which performs its task, and one is astonished, after watching this machine for a few moments, to find that the brass fitting has been made complete and practically ready for use, from metal which just before had been part of a solid bar. Some machines have as many as sixteen actions, and each tool can be varied according to the manufacturer's requirements. One unskilled workman is able to mind five or six machines, and his duties are chiefly to test the gauge of the tools and to feed with metal bars. It can easily be understood, therefore, what an enormous saving there must be in cost of labour.

These lathes, running at high speed, require constant and very liberal lubrication, either with soap suds or oil, generally the latter. The lubricant is automatically pumped up by the machine from a reservoir in the base, and falls on to the working tool. The reservoir contains about 4 to 6 gallons of oil, which, after falling on the tool, flows back to the container.

Although guards are fixed to the machines, one always finds the floor, for a considerable distance round, saturated with oil, and in many cases it is dripping from upper floors to the floor below. Metal drip pans should be very carefully fixed under and around the machine, and the oil constantly wiped up. Sawdust is frequently used for absorbing oil, and in this case it should be removed daily and placed in the open yard. The reservoirs have to be emptied and filled, and swarf or waste metal taken away, and this work, if done by a careless workman, adds still more to the oily state of the floors. A centrifugal extractor is often in use for separating the oil from the

swarf, and this again, unless metal protection is provided for the floors, adds to the oily condition. You will, therefore, I am sure, agree with me that the automatic lathe does not improve the workshop from an insurance standpoint, as if it does not actually cause fires, it makes the floor in such an inflammable state that it might assist a fire spreading to a considerable extent. The other machines in general use for turning, drilling, screwing, and cutting brass, as I have stated already, are ordinary metal working machines, and require no special comment. Metal boxes for temporary deposit of oily waste should always be provided.

For bending tubes one finds occasionally that pitch or resin is melted, which, of course, needs careful attention.

Brass and copper parts are brazed together with a mixture of brass and borax, and this is done on an ordinary iron or brick hearth with a gas blow pipe. The floor near these hearths should be protected by sheet metal to prevent hot coke from falling on the flooring boards.

SHEET METAL WORK.

Stamping, Pressing, Annealing. &c.

I will now draw your attention to the second class of manufacture—namely, fittings and articles made from the sheet-metal. This trade appears to have grown to enormous proportions during the last twenty years, owing, I presume, to the fashion for cheap brass and copper decorations on bedsteads, chandeliers, cabinet furniture, &c., and to the great improvement made in press tools. The brass sheet is also used very extensively for covering iron tubes for bedsteads and chandeliers, and for covering the metal fittings known as harness and coach furniture. A very large amount of sheet brass is also used for gun, rifle, and ordnance cartridges.

The first processes on sheet metal are stamping and pressing. The flat disc is cut out and then placed under a stamp, where a heavy steel block or tool, cut to the shape required, falls with considerable force on to a steel die, into which it fits, and the disc is pressed into shape. In the case of smaller articles, the disc is cut by a press, and then passes between the tool and die of the hand press, instead of the heavier stamp. To complete the required shape, it is generally necessary to stamp or press

the work several times, and thus shape it gradually, in order to keep the metal of even thickness. As the pressing and stamping breaks up the fibre of the metal and makes it brittle, it is necessary to bring it back to its malleable and tough condition. The work is therefore annealed by placing it in a brick furnace or muffle, and heating it red hot, but care has to be taken that the heat is not sufficient to melt it or bend it out of shape. The pressing and stamping can then be continued, if necessary; afterwards the metal is again annealed, and ready to be sent on to the lathes, &c. Piercing or cutting holes in the sheet-metal is performed in an ordinary hand press, a sharp cutting tool being used instead of the ordinary press tool. The annealing muffle, above referred to, has been the cause of many small fires and several serious ones. The muffles are often fixed on the ground floor of storeyed buildings, and in dark places, the flues being carried up through the floors over. The heat is very considerable, and the fires are kept in day and night, so that the flues soon become cracked and dangerous where passing near timber, and should receive constant and careful attention. The top of a muffle is frequently too near the timber floor over, and workmen should never be allowed to place wood or bags, &c., to dry on a muffle (a fault one often finds when surveying), as it has been the cause of a number of small fires.

Die Sinking.

Another process very often carried on as a separate trade, but connected with stamping and pressing, is die sinking and tool making. By "tool" I mean the heavy block of steel or press tool containing the raised impression, which falls into the die, and which is fixed to the top of the stamp or press and used for stamping, pressing, and piercing. Many of the smaller manufacturers have these dies and tools made for them by the die sinker, but the larger firms sometimes prefer to make them themselves. Light drilling and turning machines are used, but a good deal of the work is done by hand. The blocks of steel are placed in a furnace and heated, then allowed to cool very slowly in order to soften the metal, and after cutting or sinking the die and shaping the tool the steel blocks are placed in a hardening furnace and made red hot, and then

plunged into water or oil. This is called case hardening, as the outer part of the block only is able to cool immediately and become hard. The hardening furnaces are sometimes brick and fire heated, and sometimes iron and heated by gas, and require proper care in fixing and arranging of flues.

Turning Sheet Brass.

We will now return to the brass parts, which have been pressed or stamped and annealed, as in most instances they are now only hollow cones, and if required for bedstead and chandelier work have yet to pass through a final shaping process. The hollow cone is placed in a lathe, and the workman uses dull steel tools of various shapes and sizes, which are pressed against the cone, thus working it into shape. Two or three of these hollow fittings very often have the ends clipped together and form one fitting. In the case of vases for the top of bedstead pillars it is necessary either to clip in an iron blank with a screw hole or to run in lead to form a solid end for containing the screw. A brick built lead-melting pot is then used.

Metal Spinning.

Metal spinning is often carried on as a separate trade, and is a process on sheet metal for producing the larger sized globe shaped articles, such as copper and brass bowls, balls for ball taps, plant pots, metal oil retainers for lamps, &c. The sheet of metal is cut to size, and is fixed on a wooded mould in a lathe. This is then set in motion, and the workman presses a blunt tool at the back of the sheet and gradually presses it from the centre outwards until it fits closely round the wooden shape forming a half globe. The wooden shape is removed, and pressure is brought to bear on the outer portion, when revolving, as in the case of plant pots, in order to shape it as required, and finish it off. Such things as balls for ball taps are generally spun in two halves, which are clipped and brazed together.

FINISHING PROCESSES FOR ALL BRASSWORK.

We have now come to a point where both solid fittings and those made from sheet metal have acquired their final shape,

and the subsequent processes, except as regards small details, apply to both classes.

Burnishing and Cleaning.

Burnishing is sometimes done in the case of the best class of work, in order to obtain a perfect surface and polish. The process consists in placing the fitting in a lathe and pressing a hard polished tool against the surface, or, in the case of flat surfaces, rubbing a highly polished steel tool on the metal.

When the articles have been finished as regards shape they are usually cleansed by washing in a bath of potash and water to remove all grease and dirt. In the case of all polished articles and fittings it is necessary to place them in what is known as a pickling bath for an hour or two. The pickling bath is a weak solution of nitric or other acid and water. They are then dipped in a strong solution of nitrous acid for a few seconds, the two processes having the effect of bringing up the brightness or lustre of the metal. The work is washed in water and dried in sawdust pans heated either by steam or gas. The gas heated pans should always have a water jacket at the bottom. Very often the gas heat is direct on to the sawdust pan, and I have, in such cases, often found the sawdust smouldering. There is a liability of the workman leaving it in a smouldering condition when closing at night. I know of several small fires which have been caused in this way.

Polishing.

I would now draw your attention to a very important department—the most important, in my opinion, from a Fire Insurance point of view—namely, the polishing department. A high polish is obtained on brass or copper work by means of a “bob” or wheel made of cotton cloth, or leather, or sometimes paper, which is fixed on a polishing lathe or spindle. For rough polishing pumice powder and fine sand are used, and, for finishing off, crocus powder, rotten stone, chalk, whiting, unslacked or Sheffield lime, and various compositions made from these powders, and mixed with a little grease, &c. I think too much emphasis cannot be laid on the fire hazard in the polishing shop, as by far the greatest number of serious fires

have apparently originated in this department. A considerable amount of fine fluff is given off by the polishing "bobs," containing a quantity of the polishing powder, which, in the case of Sheffield lime, forms a very combustible material, and one very liable to ignite from self heating, especially if damp and oil are introduced to cause slacking of the lime. The polishing spindles or lathes are driven at a great speed, and liberal lubrication is therefore necessary, consequently the fluff containing lime adheres freely to the oily bearings, and is about the most susceptible substance one could imagine for producing spontaneous ignition. Fluff generally accumulates under and at the back of the work benches, and is found an inch thick on beams and other places where it can lodge, and is always ready when damp or oil is added to set up self heating. The "bobs" are frequently flying off the spindles, and as the lathes are generally near the windows one rarely finds the windows without some glass out, and in many cases, during the summer months, there is more glass out than in. This, again, increases the hazard of the polishing shop, as rain and damp are admitted and absorbed by the lime and fluff. Sparks may also enter and find the fluff a ready material for making a blaze. Fires have occurred through the fluff accumulating between the flooring boards and the ceiling below, and this danger is materially increased if there happens to be a gaslight in the room underneath to supply additional heat.

The polishing shop should always be very thoroughly swept up, and the refuse removed outside the buildings, and burnt, if possible, before closing at night. The dust is often drawn off through wooden or metal tubes by means of a fan, and this improves the cleanliness of the workshop; but the tubes, especially if of wood, generally contain a quantity of the heavier matter, where carried horizontally, and at the bends, and sometimes become choked with the refuse, so that tubes, although an improvement, are by no means perfect in disposing of the fluff. I have heard of one or two fires which have occurred apparently through accumulation of fluff in the tubes. Polishing is a very dirty process, and very little skill is required, consequently a low class operative, both male and female, is employed in this department, which adds to the fire hazard. Smoking when working overtime has, I believe, been the cause of some fires.

Sheffield lime should always be stored in closed iron or earthenware vessels, and no unused lime should be allowed to remain on the benches at night. Gas rings are used for heating glue for fastening on the leather to the "bobs," and these should be fixed where fluff cannot accumulate—a precaution frequently not carried into practice.

The more inquiries I make the more I become convinced that the losses in the brass trade and other works, where polishing is done with lime, could be reduced to a very large extent if the manufacturer would have this department in a separate building, and if he would have the workshop thoroughly swept up and the refuse burnt every night before closing.

Assembling and Lacquering.

After polishing the work passes to the assembling rooms and lacquering rooms, which are generally situated in or near the warehouse, and free from the dust of the workshop. Lacquering is, of course, done to retain the brightness and to protect the metal from being corroded, and injured by acid and damp in the atmosphere. The process consists of covering the metal with a very thin layer of lac or gum, or, as in some cold lacquers, covering it with a very thin film of celluloid.

Lacquering may be divided into two classes—hot and cold. In the case of hot lacquering, the work is placed on a hot iron table, usually heated by gas, sometimes by fire heat, and occasionally by steam. When the work becomes warm it is taken and brushed over with the lacquer, which dries quickly, the heat from the metal being sufficient to evaporate the spirit, leaving the thin layer of transparent lac or gum. The lacquer used in the hot process is, as a rule, lac or gum in solution of pure methylated spirit or alcohol. The flash point of this lacquer is above boiling heat. Sometimes a little mineral naphtha, amyl-acetate, or spirit of fusel oil is added to assist in dissolving the gum and quicken the drying, but lacquer for the hot process does not often contain more than a very small percentage of these more volatile spirits. Cold lacquering has increased very much during the last few years, especially for cheap work, and in this case the lacquer is brushed on the cold metal, and is either allowed to dry of itself or is placed in a steam or gas heated oven or stove. Much of the lacquer for

the cold process is more volatile than hot lacquer, and consists of lac dissolved in spirit containing a large percentage of mineral naphtha, amyl-acetate, or other volatile spirit. Some of the cold lacquers used, such as "zapon," "brassoline," &c. contain celluloid instead of lac, and also contain a large percentage of volatile spirit. These lacquers are highly inflammable. There have been many small fires in the lacquering department, caused by vapour coming in contact with gas, &c., and by the spilling of lacquer on to the stoves. Cold lacquer, especially, should be treated with great care, both as regards its use and storage, as the flash point of some is even below freezing point.

Wrapping and Packing.

After lacquering the work is wrapped in paper, and is ready for storing in the warehouse or for packing. The wrapping shop is often littered with tissue paper, and proper receptacles should be provided for same.

The straw and packing materials require care and attention as regards cleanliness, lighting, and heating, and the same remark applies where packing-cases are either made or repaired.

I believe I have now dealt fully with all the processes in the various departments of an ordinary brass-worker's trade.

ANALYSIS OF THE CAUSES OF RECENT FIRES.

With your kind permission, I will, however, claim your attention for a few moments while we consider the causes of fires which have occurred in the brass trade in the Birmingham district during the last ten years.

Birmingham district, as we all know, is considered to be the home and centre of the brass industry, there being about 400 firms engaged in the manufacture of brass articles and fittings, and 11,000 hands employed in this particular trade in the district. The number of firms mentioned does not include brass manufacturers or smelters, bedstead manufacturers, lamp makers, tube manufacturers, engineers, and many others who do brasswork in connection with their business, but only firms who call themselves brassfounders, or chandelier, &c., manufac-

turers, and who may be described as workers in brass wholly or chiefly.

During the last ten years the fire brigades have attended 228 fires which have occurred in brassworks, and these I have, as far as I have been able, classified, first under departments in which the fire has originated, and then as regards the various causes of fire. There have, of course, been very many small fires to which the brigade has not been called, but of these I have no record:—

Departments.

Lacquering,	18
Annealing,	22
Casting,	11
Polishing,	22
General workshops, which, in most instances, include the polishing shops,	123
Warehouse,	10
Yard,	12
Sawdust, drying out and pickling,	3
Gas-engine house,	5
Chasing,	2

Causes of Fires.

	Damage Slight.	Damage Severe.	Total.
Timber too near fires or gas,	19	4	23
Spontaneous combustion (chiefly polishing shops),	22	5	27
Spirit vapour,	20	—	20
Muffles,	21	3	24
Casting furnaces,	5	—	5
Sparks from fires,	3	1	4
Sawdust drying pans,	3	—	3
Yard fires,	12	—	12
Light thrown down,	13	4	17
Gas,	8	1	9
Locomotives,	1	1	2
Hot metal,	4	1	5
Oil boiling over,	1	—	1
Pitch boiling over,	2	—	2
Gas-engine,	1	2	3
Japanning stove,	1	—	1
Friction,	2	—	2
Hot ashes,	6	—	6
Stoves,	2	1	3
Steam pipes,	1	—	1
Children playing,	1	—	1
Oil lamp,	1	—	1
Unknown,	15	41	56
Total,	164	64	228

You will observe that of the 64 fires where the damage has been severe, in no less than 41 cases the cause is not definitely known. As, however, almost all serious losses are placed in the hands of Assessors, I have consulted our friends, the Assessors in Birmingham, and they have been kind enough to inform me that, as far as they have been able to ascertain, a very large proportion of the fires have apparently originated in the polishing shops.

I am sure you will all agree with me that this is a very important fact for us to consider when surveying or rating a brass risk.

I heartily thank the chief officers of the Birmingham and Aston Fire Brigades, and the Fire Loss Assessors for their kindness in assisting me to gather the above particulars, which, I trust, will be of some service.

FISH HOOK AND FISHING-TACKLE WORKS AND NEEDLE WORKS.

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*A Paper read before the Insurance Institute of Birmingham,
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It would not be an easy matter to select a more interesting or desirable minor-subject for a fire paper than the one now before us. It is true that to Midlanders the title is most likely to appeal principally, yet there are reasons why the interest should not be purely local. The fact that a fishing-tackle establishment may comprise so many different processes of importance—one might indeed say, so many different trades—at once suggests that a study of the industry must prove profitable to all. Moreover, the theme has not been rendered stale by reason of too liberal treatment in the past—in fact, quite the reverse is the case.

Yet, on the other hand, such risks, from the underwriters' point of view, can scarcely be said to embrace many features peculiar to the class. It is rather in the variety of processes that the interest lies. The diversity is wide. Thus we may find sawmilling and general woodworking (with and without power), engineering and metal work, including furnace tempering; plating and polishing; varnishing; rope walk; basket-making; as well as the delicate hand-processes connected with the finishing of fly-hooks. Surely such a class is inviting in its very comprehensiveness. And if that remark applies to the fishing-tackle division, it is evident that the addition of a description relative to the allied trade of needle-making must necessitate that much ground be covered under the present title. Such being the case, it is clear that all temptation to romantic or historical prologue should be resisted, and a step taken right away *in medias res*.

It is perhaps desirable, in view of the relatively narrower field covered in the needle-making industry, that that branch of the subject be dealt with first, thus clearing the way for the more important and more interesting (because more varied) section—that of fishing tackle.

NEEDLE WORKS.

It may be said at the outset that, apart from the relative trades of cardboard-boxmaking and general fancy work, occasionally, but by no means invariably, to be found in such factories, the actual work required in the manufacture of the needle is practically non-hazardous.

The wire, with which operations commence, is received in coils from the wire-rolling mills. Usually, only the best steel wire is used. Occasionally something is done in the way of wire-drawing (that is, stretching) by slowly-revolving power-drums. As a rule, however, the wire is received by the needle people in the required thicknesses. It is thus ready to be reduced, by machinery and by hand, to the length and to something like the shape required. In the tool shop the definite size is arrived at, and as needles are invariably made in pairs, each length of steel is, in the early stages, twice as long as the finished article. The size determined, the actual making is proceeded with. This is done by stamping machines, usually worked on the treadle system, but occasionally by power. For pointing, a small power grindstone is as a rule required, while the eye is pierced by means of a hand-press. These processes completed, filing by hand ("burring") is needful, to do away with all roughness and edge imperfections. This done, each piece of steel is divided into two complete needles.

After these preliminaries comes an important stage. The article has to be rendered fit for use by passing through the furnaces. This is known as hardening—that process so essential for producing utility and durability to many kinds of metal goods. Hardening is frequently done in a detached building, probably specially built for the work. If so, the furnace, with its flue, will no doubt be found to be quite satisfactory, and the shop itself to contain as little as possible of a combustible nature. Later on, in the other section of the subject, further reference will be made to hardening, with the

closely-allied, if not synonymous, processes of tempering and annealing.

On leaving the hardening shop, scouring is needful. For this the needles are packed in rolled sacks, which are spread with soft soap and emery powder, and by large and powerful runners the sacks are made to revolve. They are driven to and fro in a manner suggestive of mangling, and the treatment frequently lasts a week, each package being daily renewed with fresh supplies of soap and emery powder. This mangling process is succeeded in turn by cleansing, first in soap-suds vats, usually steam-heated, thereafter in pans of sawdust. The latter, although used as a rule cold, must be quite dry as well as clean. The shaking-barrel, as a further means of cleansing and brightening the stock, is at this stage usually resorted to. The finishing touches are obtained by application to an emery-wheel or buff-leather bob. This is a particularly delicate process, requiring extreme dryness of hand. If it is successfully done, the finished needle is ready for packing and despatch.

There is nothing hazardous or specially inflammable about the paper used in packing; blueish-black in colour and tough in texture, it is, no doubt, invariably procured from the paper-mills. It must, however, be kept specially dry, because of the fragile nature of the stock, which would quickly be damaged by any suggestion of moisture. While the bulk will be stored in bundled reams, it is important to observe by what means the paper that is about to be used is maintained in proper condition. Sometimes this is done by placing it on rails near pipe stoves, an arrangement to which (all due precautions as to proximity and otherwise being taken) there is perhaps little objection, because actual drying is not so much required as merely an absence of dampness.

Such, then, is the comparatively uneventful story of the making of that invaluable little instrument the needle. It cannot be said that any of the mechanical or manual dealings through which the wire passes ere the finished article is produced offer in themselves much fire hazard. No mineral oils or other inflammables are required, either for cleaning the machinery or otherwise. The buildings, moreover, with the exception of the roof, are frequently incombustible internally, stone floors, with an entire absence of wood lining to walls, being the rule rather than the exception. Wood partitioning

between the various workshops may, however, occasionally be found, as well as wooden staircases. Height, too, is a feature which may more and more require consideration, the old-fashioned shed or two-storey buildings tending in these days to be replaced by loftier structures. If steam power be used, the boiler is more than likely to be outside. The machinery is inexpensive, and hardy rather than fragile. Artificial heat is usually supplied either by exhaust steam or (more commonly) by pipe stoves. The latter, although frequently in the centre of the rooms, are rarely conspicuous by reason of their size. So obvious is it that in all risks careful examination must be made of the mode of lighting and heating, reference is hardly called for to the danger of faulty illuminating arrangements, or (if lamps are used) to the storage of paraffin oil within the main risk.

Some firms make a feature of fancy box-making, while packing-cases for the despatch of goods may also be manufactured on the premises. In either event, it is, of course, very desirable that such work be done in a detached department forming a separate risk. And, indeed, but little difficulty should be experienced in convincing any business firm of the unwisdom of allowing the rate for their staple industry—one largely without risk, *per se*—to be prejudiced or governed by a subsidiary, yet admittedly hazardous trade. Thus, with ground space permitting, the reasonableness of suggestions for the isolation of the boxmaking department would probably be admitted, and, it is to be hoped, duly complied with. In the last-named branch, power-sawing may be required, together with planing, and, in a minor degree, the general features of a wood-working risk. Added to these, if fancy-box-making or case-making is carried on in the same building, while power is not likely to be required, the arrangements for heating glue,* paste, and the like, will demand observation, as well as the means by which the cases are kept perfectly dry. The state of cleanliness, too, and the number of hands employed in each department require noting.† A daily removal of waste is as distinctly essential as secure lighting arrangements.

* The frequently-observed method of placing a Bunsen burner or gas ring on a wooden bench protected only by a sheet of iron should invariably be condemned. A stout flagstone, a layer of bricks, or other non-conducting base, should be deemed essential. Rubber connections to gas rings are happily becoming more rare, metal or suitable composition being now more often found.

† The number of hands in the cardboard box department is, as a rule, but small.

Allowing for the considerable water damage which would result to the stock (if not to the plant) even from a slight outbreak, the low rate of 2s. 6d. per cent., which in the past has largely obtained, is apparently very reasonable. Extras, however, have doubtless been held to be exigible, when applicable, in respect of partial defective construction, wood lining or partitioning, height or size, undue number of stoves, imperfect lighting or power arrangements, or of extraneous hazard. Yet, in the absence of a tariff, and in view of the not unfavourable experience of the class, it is probable that substantial additional rates for the features mentioned represent an ideal rather than a tangible standard. Certainly, few manufacturers have in the past paid more than 4s. 6d. per cent.

FISHING-TACKLE WORKS.

And now the other section of our subject—that of fishing-tackle making—calls for attention. Reference has been made to the very comprehensive nature of the work requisite for the full equipment of the “complete angler.” It is, of course, true that all factories do not include the varying trades detailed—viz.:—those of sawmilling, engineering, metal-working, plating and polishing, varnishing, and basket-making. In these days business firms are quicker than ever to see the futility of attempting to produce work which, for the lack of local convenience, can be turned out only at a loss. They do not share the belief of the old woman who, buying oranges at sevenpence per dozen and retailing them at a halfpenny each, assured herself that good trade and large sales could not fail to bring success. Thus, many manufacturers may not attempt to compete with the sawmiller, the twine manufacturer, or the basket-maker, preferring rather to purchase the already sawn timber or the finished line and creel. Yet, such considerations need not concern us at present. Let us turn our thoughts towards a typical and fully-equipped works—where the Western forest giant and the Eastern bamboo are transformed into so many graceful and supple fishing-rods, the rough metal castings into compact and reliable reels, and fur and feather, by the aid of wire, gut, and silk, into the alluring fly.

The wood stores are the first buildings to claim attention. As a rule, these will be found to consist of well-erected sheds,

incombustible internally, and probably without the need for artificial light or heat. If so, and if the distance from the sawmill and other buildings be sufficient, no feature of hazard is likely to present itself.

The open seasoning sheds, however, deserve careful observation. Frequently, for the sake of convenience, or because of lack of ground space, they will be found in the near neighbourhood of the sawmill—sometimes so near as to form one risk with it. If such is the case, it may be possible (it is certainly highly desirable) to have the sheds demolished—as a rule they consist merely of a roof on metal, brick, or wooden supports—and re-erected at a safe distance from external hazard. With no need for lighting or drying, save by natural means, these sheds, if free from adjacent risk, form a desirable part of the insurance, as well probably as a considerable item in the total schedule. The wood stored is mainly hard (although some deal will be found should packing-cases be locally made), usually English oak and elm, interspersed with the still more robust American greenheart. It is, too, rarely perched; more often it is stacked horizontally with but slight air spaces between the planks—"pigeon-holing," "honeycombing," or "stripping-lathed" being the trade terms. When well seasoned, the timber may be "stacked flat." This last is much the most desirable arrangement from a Fire Insurance point of view, not only because the risk may then be said to be entirely one of contiguity, but also because a very considerable outbreak would be required seriously to damage hard wood when stacked flat. This method, however, can be used only with properly seasoned stock, otherwise discolouring and deterioration result. If free from external hazard, the 4s. rate, suggested by the timber tariff, is doubtless quite satisfactory—at least to the office.

Having seen to the storage arrangements, we are ready to enter upon a consideration of the actual work done, and may proceed to examine the sawmill. It may be found that this building is one of the real old-fashioned type. To light construction (with paraffin lamps or swinging gas brackets) may be added disquieting boiler or lubricating arrangements—the whole comprising a risk which seems to be one of the exceptions proving the wisdom of the rule demanding invariable declinature. Yet such is a passing type, and we are as likely

as not to find an inviting modern structure with incombustible floors and internal walls, the power being derived from a gas-engine, satisfactorily embedded, or from the increasingly-popular electro-motor. If the latter, whether enclosed or semi-enclosed, an ample metal case is necessary, if only for cleaner and better working. A supply of fire-buckets is always a desirable addition to the contents of the building.

It is natural that in a private sawmill a higher standard of cleanliness should obtain than in one which plies for the wood trade generally. Nor is this the only better feature met with in the former. Apart from the important point of quantity of work done, there is also the quality to be borne in mind, and in the private workshop, the light and easily combustible timber of the builder or ordinary sawmiller gives place to the incomparably more desirable hard and heavy wood. Again, there is less likelihood of occasional crowded conditions resulting from an exceptional order, of which completion may be required quickly. The workmen, too, are perhaps more careful and more often of the old retainer order than in the typical sawmill, where the same fixity of tenure as to employment does not prevail. Still, even bearing in mind its advantages, our private sawmill must be carefully inspected, and, if not of shed construction, the height and other occupancy noted, as well as the number and nature of machines in use. If cases of light timber for the despatch of finished goods are put together in the mill, such work will probably represent but a small proportion of the whole. Such features as the position of gearing, oiling arrangements, reception and due removal of refuse, will naturally suggest themselves for observation. But, above all, the method of artificial lighting and heating (if any), together with general management and order of cleanliness, must be inquired into. It might be said that if the three points last mentioned are quite satisfactory, there is perhaps little to fear in the mill risk, which, if a guinea rate can be carried, is probably far from being the most unpleasant item of the policy. The question of rating calls to mind the mistake, for more reasons than one, of receding much from the percentage which the ordinary builder is obliged by tariff to pay. And this maxim is one of general application. Quite apart from the question of merit, an inadequate or even a fine rate on a portion used in a minor, yet obviously hazardous manner, has a distinct

tendency unduly to lower the rating for the main risk. Nor is it easy to refute the well-founded arguments as to comparative hazard which keen Insurers may bring to bear.

But let us now follow the sawn timber into the rod-making shops. Here it is received in considerable lengths, with rough square edges. Power trap-planing, turning, and hand-planing are likely to be done, so that a constant removal of all waste from the workshop is essential. The thin strips and shavings of the hard timber—which is mainly used—may be less easily ignited than the ordinary light refuse of the carpenter, but, on the other hand, the wood in this state burns with surprising readiness; without doubt, it would be equally effective in aiding the spread of an outbreak. A further need for exceptional cleanliness is afforded by the fact that a fair proportion of the rods may be made of bamboo, of which the fragile and easily-destructible nature is well known. The bamboo is occasionally artificially coloured by means of slight surface burning, imparted by a Bunsen blowpipe. Possibly only one workman may be employed at this process, which, in skilled and careful hands, offers but little risk. Glue-heating arrangements will require attention, for something of the kind will be used in connection with the ferrule and handle-fitting, usually done immediately the rod has been sufficiently prepared. An elongated hearth, entirely of brick and mortar, suggestive of a blacksmith's forge, is now sometimes used in straightening any parts which incline to bend. The pieces are rendered more pliable by being held over this evenly-distributed and not excessive fire, and, on withdrawal, their slight deformity is readily rectified by hand.

Other woodworking in this shop may be done in the form of the frames of landing-nets, and possibly in preparing walnut, or other hard wood, used in producing wooden creels, but it will doubtless be found that the greater risk of rod-making includes the less. Hand cord-whipping or binding of parts and of metal ends (possibly involving the use of heated wax or dubbin) may also take place in this department. This last process completes the rod, except so far as the finish by varnishing is concerned.

All varnish required is almost certain to be brought to the works in the ordinary stoppered vessels, so that, if a good English variety be used, the hazards incident to its manufacture

need not here be dwelt upon. French polish may, however, be made in a small way. As a rule, these substances are applied cold to the now finished rod. This work should be carried on in a separate room or rooms, and the lighting and heating arrangements (at all times of such vital moment) are here especially to be examined. If only approved electricity and low-pressure hot water pipes be used, good and well, but stoves, either for coal or for gas, are objectionable in this department, and, if they exist, must be placed as far as possible from the coagulated mass of varnish which is almost certain to accumulate in parts of the floor. The latter should be frequently scraped clean; if it be lead-covered so much the better. It is, in fact, specially important that for the state of cleanliness, and for the lighting-up arrangements of this branch, a trusted employee be made responsible. As already stated, it will probably be found that the varnish requires no artificial heat; if otherwise, the need for due observation is self-evident.

Having considered the various stages by which the rod is produced, attention may now fitly be given to the other branches of the work. In the metal department a blacksmith's and engineer's shop will be found. Its main use will be the making or finishing of ferrules (usually fitted, as stated, in the rod-making shop), and the putting-together of reels. The modern reel is chiefly made of gun-metal, brass, or aluminium, and it is more than likely that all metals required are received at the works in castings. Lacquer, which may be used in a small way for finishing brass parts, will doubtless be applied cold; fitting parts together may, however, be the only work done, beyond the maintenance in proper efficiency of the workmen's tools. A brazing hearth, some power-drilling for hole-boring, may, with turning-lathe work, be seen, but in this department, assuming suitable arrangements and construction, little of an objectionable nature is likely to be met with, harmless metals being turned and possibly cut by a power saw. If wooden reels are made, hard wood may also be turned here, but the requisite varnishing or french-polishing will probably be done in the rod-finishing department.

In the metal portion of the works, bait-cans, too, may be made. These are required for preserving live bait, and the risk of their manufacture is simply that of the ordinary tinsmith's workshop. In addition to the small stoves used in heating the

soldering tools, furnaces for melting lead and tin may also be found — suggesting customary precautions. Occasionally the bait-cans are japanned after manufacture, but probably only a small proportion are so treated. Gas-heated japanning stoves, if required and obtainable, are preferred by manufacturers, because of their convenience and efficiency in working; rarely more than 100° heat is used.*

In the artificial bait-making department but little work necessitating careful scrutiny will be found. Yet the shop by no means lacks interest. Much of the finished products here (made by steel dies) consist mainly of thin spoon-shaped pieces of metal, varying, of course, considerably in size (usually from 6 inches to half an inch); the ends comprise a set of doubled or trebled hooks, securely fixed, and, strange to say, in full view. Indeed, were it not for the effect produced by a simple little addition to the artificial bait, its efficacy would be a minus quantity. That addition is the swivel—a tiny metal tube, with very small bore, which, attached to the top of the bait, produces what astronomers would call an optical illusion; this happens by means of the rapid revolving motion occasioned when the line is drawn through the water. Without the swivel's agency, not even the most inexperienced fish would be tempted to satisfy its appetite upon so evidently indigestible a form of sustenance. A little lime-polishing, and perhaps plating in a small way, as well as painting by hand, may be done in this department, the object being to give to the finished product an appearance as edible and as inviting as possible. A small quantity of celluloid may be kept, but work is mainly done in metal, although indiarubber will doubtless occasionally be dealt with—perhaps only cut and shaped by hand. Thus, with enclosed metal receptacles, respectively for the temporary deposit of lime and of oily rags (should mixing of paint be done), the bait-making workshops will probably not add materially to the risk as a whole. Swivel-making, too, done in metal, both by hand and by machinery, will require even less attention from the surveyor.

* Soldered goods being of course rarely subjected to a temperature exceeding 100° Fahr., the risk attending their japanning is not to be compared to that of cycle parts or even of metal trays or deed boxes (the latter are usually rivetted); for these articles 350° may be required. It is rather remarkable that so-called tin goods almost invariably consist of sheet iron dipped in molten tin: the last-named metal is quite an expensive one.

The float-making department, however, demands more than a passing glance. Cork is probably here shaped on power turning-lathes, and the rapidity with which shavings accumulate is as noticeable as is their readiness to burn. Thin cork shavings are, indeed, probably more objectionable than those of the ordinary carpenter; they should, therefore, be placed in sacks as made, and removed daily from the buildings insured. Hand-painting will again be found here or hard by. But goose-quills may be used even more largely than cork in the making of floats; in any case, each variety will be finished by varnishing or painting. This is done, as a rule, in quite a small way, and, with reasonable precautions, the process offers but little risk. Inquiry is desirable as to the possible use of naphtha (either in this department or elsewhere) for cleaning feathers or quills.

An observation of the course followed in hook-making will mean a brief return to the metal-working arrangements. As in the case of needles, steel-wire, received in coil, is the foundation for the manufacture of the hooks. Of these the best are made by hand, and while the varied processes by which the wire is converted into the finished hook offer much interest, there is but little to be found in the way of fire hazard. Hand-cutting, shaping or bending, flattening, and similar work on the raw material is free from risk; yet the necessary annealing, hardening, and tempering suggest a hotter zone.

Of this work (hardening and the like), which is usually done in a separate building, the object is to give the hook a finish of firmness to fit it for the very important part it has to play. First of all, the hooks are thrust in large shovels into the annealing and tempering furnaces until rendered sufficiently pliable. Then follows immersion in a large vat of oil—whale or cod oil. Afterwards the effect of the hardening furnace is applied. All this treatment strengthens the delicate hooks, which, on cooling, are presently ready for the final beautifying stages. So self-evident are the hazards attending the use of great heat, particularly when well-nigh constantly employed, that ample provision is more than likely to be found for the safety of this branch of the work. By its dense and cloudy atmosphere, a tempering shop undoubtedly appears hazardous, while the fragrance usually encountered is hardly so pleasing as that of otter of roses. Probably, however, these are the

worst features, and, if specially erected for the purpose, little risk will be found. Indeed, even in the case of converted buildings, due precautions will doubtless have been taken as to the adequate strength of chimneys and the protection of any contiguous or combustible material.

These processes are duly succeeded by a colouring treatment usually called "brightening." This consists of bronzing, "blueing," or blackening the hooks, which are temporarily deposited in a japanning vat. The japan may be mixed or thinned by turpentine or otherwise, on the spot; in any case, it should be incumbent upon the workmen that only a sufficiency for immediate use be kept within the building, the bulk of inflammables being deposited in completely detached and secure storage. A furnace treatment, on a smaller scale than in the preceding department, will also be requisite to ensure the success of the brightening.

Thus the hook, having gradually reached completion, is ready for the few hand processes required for its full equipment and utility. These, in themselves offering no risk, may consist simply of tying on the imported gut to produce the ordinary natural bait-hook. In the case of the many varieties of fly-hooks, use is made of rabbit fur, of seal, wool, and bird feathers, the last-named being required for the fly-wing, the others for the body of the fly. The chosen pieces are hand-bound by means of a thin strand of the best silk, waxed, while tinsels and a little fine wire plate are occasionally used to render the fly as life-like in appearance as possible. This, it must be admitted, is a department of the business sphere in which the sterner sex is quite outclassed. A large stock of feathers and other requisites may be stored on the premises, the lighting and heating arrangements calling for the inspection such features always deserve, especially as pieces of fluff are apt to fly about.

If fishing-lines are manufactured on the premises—the exception rather than the rule—cotton, hemp, and silk will form the component parts. The actual process of making is practically that of a first-rate rope-walk, although for the following reasons the risk of fire is likely here to be less. Only a few hands will be required in the department, which is probably in a remote part of the premises, and therefore neither endangered by, nor offering hazard to, adjacent buildings. The leading features of this kind of work will suggest themselves for

due observation, *e.g.*, the arrangements for heating pitch, means of artificial light (naked gas brackets being barred), and for teasing or heckling, the last-named likely to be done by hand on a small scale. Cleanliness and good management, although often lacking in typical rope-walks, may be more confidently expected here.

After it has been spun, the line is protected, just as the rod was, by a process of waterproofing or varnishing. The cheaper kinds of lines, however, do not receive this treatment. The varnish, which is slightly warmed before being applied, is usually contained in a small open vat, through which the line is allowed to pass ere being wound around the ample drums. On these the line remains until completely dry. Sufficient warmth to the varnish will be afforded by placing it for a little near the low-pressure steam pipes by which the temperature of such shops is often maintained. Heating by pipes appeals to the manufacturer, who requires a fairly constant degree of warmth. Generally the very modest heat of 80° Fahr. will suffice.

Having followed the various processes necessary to produce a tackle sufficient to grass the fish, there is now only the basket to be considered. And it is by no means certain that these are locally manufactured. Like varnish, rod-covers, "waders," and general personal outfit, baskets are more likely to be obtained ready-made. Even if produced on the works, however, the number of hands employed will, in all probability, be but few, and, indeed, the smaller the scale on which such work is done the better. Due observation must attend not only the quantity of rough material and finished ware, but also the possible use of stoves, glue, and varnish. The lighting arrangements must be considered with especial reference to occasional crowded conditions; no lights should be allowed in the part used as storage. Not infrequently is it surprising how daily usage will prevent the local perception of features of considerable hazard.

With regard to the ultimate disposal of the goods in which the factory deals, it will probably be found that the larger firms transact a wholesale business only. Thus, the orders of the dealers whom they supply will usually be executed by the despatch of large wooden cases in which the required stock has been packed. This department will naturally call for the usual inquiries, not only as to the mode and location of the

packing arrangements, but also as to the origin, bulk, and variety of the cases used. While it is unlikely that the other materials required will be found to be objectionable, the importance of first-rate management and equipment for this item, the last, but not the least, is, of course, self-evident.

It would now appear that we have proceeded so far as theory and abstract description will lead, yet the need for something more definite is apparent ere a true and workable idea of any given factory be realised. This need, however, is one which can be fully and satisfactorily supplied only by the personal visit of the trained official. It might perhaps be said that in no class of risk is the exigency more obvious than in a fishing-tackle works for the surveyor's full and illustrated report and summary showing divisions of the buildings. Possibly the class comprises no department which in itself would be condemned as distinctly objectionable. Rather it is the cumulation of many features of minor risk that demands consideration. Thus, the question of the desirability of any factory is, apart from general and obvious points—*e.g.*, site, construction, size, power, management—largely dependent upon ample distribution; and thus rating on merit must apply to this class as clearly as to any. But the question of rating is not one to be dealt with here. It is not, indeed, within the province of this paper to do more than to refer on the one hand to the not conspicuously unfavourable past record of this class—which, however, is quite a limited one—and, on the other, to the fragile nature of much of the stock which would very easily be damageable* not only by water, smoke and steam, but also by even a slight outbreak of fire. It might be added that, in the past, 7s. 6d. per cent. as a guide-rate has apparently obtained.

* As to the storage of finished stock (especially that of the most expensive fly-hooks), one disquieting feature will frequently be present, viz., that some thousands of pounds worth of fragile goods may be deposited in a single small warehouse. Thus, contiguous as well as intrinsic risk must, as far as possible, be eliminated.

INSPECTION OF AUTOMATIC SPRINKLER INSTALLATIONS.

By H. S. RADCLIFFE.

*A Paper read before the Insurance Institute of Bristol,
30th November, 1906.*

In this paper it is not intended to outline a history of the development of the Automatic Sprinkler movement and its effect upon our business, nor shall we enter into the merits or demerits of sprinklers as applied to the various classes of risk found in this country. Endeavour will be made to assist the young Surveyor in his work of inspecting Sprinkler Installations, and particularly to help him to intelligently appreciate the reason for the various questions he will have to answer when preparing his report for the Office.

It will be assumed that the tyro has some knowledge of the work before him; to do otherwise would be to make these remarks tedious and defeat the object in view.

An Automatic Sprinkler is a mechanical device for the extinction of fire without the aid of human agency, and is dependent upon an efficient water supply in order to do its work when called upon. Sprinklers have not been designed to extinguish conflagrations, but rather to put out fires in their incipency, and with this in view it is of paramount importance that the water supplies should be ample in volume and pressure. The "Rules of the Fire Offices' Committee," now in the 12th edition, have been compiled as the result of long and varied experience, and are framed with the object of safeguarding the interests of insured and insurer alike.

WATER SUPPLIES.

It is indispensable that every ordinary sprinkler installation must be provided with two separate and adequate sources of water supply, always available; one of such sources of supply

must be practically unlimited. There are ten different combinations of water supplies recognised by the Rules, as follows:—

1. Town's main and elevated tank.
2. Town's main and pressure tank.
3. Town's main and pump; in this case the pump must be "automatic."
4. Town's main and automatic hydraulic injector apparatus.
5. Pump and elevated tank.
6. Pump and pressure tank.
7. Pump and automatic hydraulic injector apparatus; in this case the pump must be automatic.
8. Hydraulic injector apparatus and elevated tank.
9. Hydraulic injector apparatus and pressure tanks; and
10. Connection from two separate public mains, supplied from independent sources.

After being satisfied that the type of sprinkler adopted is one approved by the Fire Offices' Committee, the primary duty is to carefully examine the plans of the contracting engineers in order to ascertain that the area of the distributing pipes and rising mains is sufficiently large, and that these are not overloaded; that is to say, that there are not more sprinklers fed by a certain size of pipe than is recognised by the Rules. This work should, of course, be done before visiting the protected risk, and any deviation from the Rules should be noted so as to see, upon inspection, whether the erectors have worked precisely to the plans, or have discovered the error and conformed to the Rules. Any serious deviation should be at once pointed out to the engineers.

We may here remark that, if practicable, a visit to the risk to be protected should be made, with the plans, before erection has actually commenced. The proposed position of the main feeds, valves, and sprinklers should be noted on the spot, and if the Surveyor has any suggestion to make it is likely to receive more favourable consideration at that time than after the work is completed, more efficient protection thus resulting and possible friction avoided.

TOWN'S WATER.

Where the town's water forms one of the sources of supply to the installation, the first consideration must be the size of

the main in the street. This information can usually be supplied by the insured or his engineer, and should be confirmed by the Local Authority supplying the water. Particular attention must be given to this, as it forms a very important feature, for should the main in the street from which the branch supply-pipe to installation is taken be insufficiently large, the efficiency of the whole would be seriously impaired, and the installation would not be in accordance with the Rules.

The pressure of water available is the next item to be noted, and this must be sufficient to give 10lbs. to the square inch on the highest sprinkler on the premises. As it is rare to find a pressure-gauge fixed at a point level with the highest sprinkler, a calculation must be made in order to obtain this information. (Even if one were fixed it would not prove to be of any great utility, for experience has shown that after a time a false pressure is indicated.) A gauge is attached to a pipe taken from the branch from the street main at a point below the back pressure valve on the branch. This gauge indicates the pressure in the street at the moment, and we must now ascertain the distance in height between the top sprinkler and this gauge, and allow 1lb. for every 2.3ft. For example: The distance from the top sprinkler to the gauge is, say, 72 ft. Pressure on gauge 90 lbs.: $90 - (72 \div 2.3) = 90 - 31 = 59$ lbs., the approximate pressure on the highest sprinkler. I would here remark that indicated pressure on the gauge is no index to the volume of water capable of passing through a pipe; practically the same pressure would be indicated on the gauge if the pipe were a quarter of an inch in diameter or 6 inches.

Information should be obtained as to the reliability of the town's supply, especially during the summer.

VALVES.

The position of the back pressure valves, or check valves, as they are sometimes termed, should be noted on the plan, and also that of the main stop valve. There must be a check valve on each supply pipe to the installation. The main stop valve should be secured "open" by a padlocked or riveted leather strap, padlocked for preference, and should be fixed in an accessible position, if possible near to an external doorway.

The necessity for the latter precaution is to readily facilitate turning off the water after a fire is extinguished, and thus minimising water damage.

It may be well to remark here that if a protected risk demand a large number of sprinklers the installation should be divided so that one main stop valve shall not control more than, say, about 1000 heads. In the case of an installation erected on the dry-pipe system, this must not exceed 700 heads.

Subsidiary stop valves are not allowed on any supply pipes except on the supply pipes from town's mains, private reservoirs non-automatic pumps, and pressure tanks, and such valves must be secured open by a padlocked chain. In special cases small shut-off cocks may be allowed on the supply pipes to sprinkler heads fixed inside wheel boxes and gearing towers, or to sprinklers in exposed water-wheel places, cartways, loading places, external hoists or gangways, and external closets, where there is a risk of freezing; the cocks to be of the plug type with fixed handles.

It is usual to find that the local Water Authorities have a stop valve in the street on the branch from the main, and where this is provided we are able to test the secondary water supply to the installation, as will be described later.

No connections may be allowed to be taken off the sprinkler service for any other purpose, but a pipe of not greater diameter than one-and-a-half inches may be allowed for ordinary service, to be taken from the branch from the mains at a point on the town's main side of the check valve on the branch.

TESTING ALARM.

The alarm gong should be fixed in a position where it can be easily heard at all times, and especially at night. If workmen's dwellings are situated near the protected risk, the gong should, of course, be fixed on that side of the mill.

Having noted the reading of the pressure gauge (a) on the branch from the town's main, it becomes necessary to record that on the gauge (b) fixed between the main stop valve and the check valve on the branch from the main, and also that on the gauge (c) above the alarm valve. It will be found in the majority of cases where the town's main forms one of the

supplies, that the indicated pressure on gauges (b) and (c) is higher than that shown on gauge (a). This is known as a "bottled-up" pressure, and is caused by the pressure in the town's main (which in nearly every case is at its maximum in the night) finding its way into the installation during the night, and held there by the alarm valve and the back pressure valve.

The next operation is to test the alarm valve and the working of the gong. This is done by opening the $\frac{1}{2}$ -inch cock provided for the purpose, and fixed at a point on the installation side of the alarm valve. The opening of this valve is equivalent to the operation of one sprinkler. Immediately this is opened the "bottled-up" pressure referred to will be gradually reduced until it equals that of the pressure below the alarm valve, and in a short time the alarm-gong should be heard ringing, and should continue to ring.

At this point it may be well to mention that care should be taken to see that no horses are standing adjacent to the gong when testing, as the sudden application of the hammer may cause them to bolt, and serious consequences ensue.

The pressure indicated on the gauges (b) and (c) should, after testing the alarm, be equal, assuming, of course, the gauges are fixed on the same level. In practice, however, it is often found that there is a slight variation in the gauges of, say, one or two pounds, but this is immaterial, and is due principally to a trifling strain in the mechanism of the gauges. Any serious strain should be reported, and the gauges examined.

RUNNING PRESSURE.

The next test is that of "running pressure." We have already described a modified form of this test in opening the $\frac{1}{2}$ -inch testing cock, but a more drastic one is necessary. This is done by shutting off the cock on the pipe leading to the alarm motor, and opening a 2-inch drain-tap provided. This is approximately equivalent to the simultaneous operation of 18 sprinklers. The indicated pressure whilst the water is running will be lower than we have hitherto observed, yet should be sufficiently high to show that a sudden call on the mains can be met.

It is necessary that the 2-inch drain pipe should be of the

same diameter (or not less than 2 inches) the whole distance from the installation to the outlet, and that the valve itself has a clear 2-inch diameter. Theoretically, the minimum running pressure during this test should not show a reduction of more than about 25 per cent. of that of the standing pressure in the case of a 4-inch installation, or 16 per cent. in the case of a 5-inch installation, or 11 per cent. in the case of a 6-inch installation. When making this test care must be taken to see that the water from the 2-inch outlet can get away to an adjacent drain. If this be not provided the water may cause inconvenience, and in winter may become frozen, with disastrous results to horses and passers-by.

ELEVATED TANK.

The elevated tank, where one is used as a source of supply, must now be considered. The size of this must be ascertained to see if it is sufficiently large to comply with the Rules. The ball-tap fixed on the surface of the water should be pressed down to see if it is in good working order, and it must be seen that the float attached to the indicator, if made of wood, is not water-logged. The tank base should be at least 15 feet above the highest sprinkler on the premises, and careful measurement of this must be made. Particular care must be taken to see that the stop valve on the pipe supplying the tank is secured "open," and strapped, and also that the stop valve on the pipe for emptying the tank is secured "shut"—i.e., padlocked and chained.

The recent alteration in the Rules regarding the position of the check valve on the down pipe from the tank is a great improvement. It is now provided that the check valve shall be placed not less than 15 feet from the base of the tank. The practice of fixing these valves immediately under the tank was objectionable, as there was necessarily very little pressure to open the valve if it got in the slightest degree stuck.

Enquiries must be made as to the possibility of the water in the tank becoming affected by frost. The tank must be covered in, and if necessary a steam pipe or other warming arrangement should be provided to keep the water at a temperature above freezing point.

Occasionally it will be found that the tank is utilised for purposes other than for sprinkler service, and where this is the case it must be seen that the pipe for supplying this other service is placed at such a height above the bottom of the tank that the quantity of water in the tank can in no case be so reduced through such outlet as to leave less than the specified quantity required for the sprinklers.

It should be here explained that the check valve on the down pipe from the tank is for the purpose of preventing the water from the main, or other supply, having a superior pressure to that of the tank supply, forcing itself into the tank through the down pipe. That this check valve is working satisfactorily can be seen from the fact that there is no water passing through the overflow pipe on the tank. To discover whether the check valve on the branch from the mains is acting properly, it is necessary that a pipe, say, for domestic or ordinary fire purposes, be taken off the branch below the check valve. We will assume, for the moment, that such a connection has been made. The stop valve on the branch having been shut, a cock on the domestic service mentioned should be opened. If water continue to run for any length of time, the inference is that it is coming from the tank owing to the check valve not doing its work effectively, but before this can be conclusively proved it must be seen that the stop valve in the street is shut dead tight, and that there is no leakage through the ball tap in the tank. If there be any leakage through the ball tap the pressure on gauge (b) will be reduced. If the check valve be faulty it must be examined by the engineers. The necessity for this defect being remedied at once is obvious, for should the town's water be cut off, or the pressure become at any moment inferior to that of the tank, the latter would become drained, and the stagnant water therefrom would find its way into the street mains, to the detriment of persons using it in the immediate neighbourhood, to say nothing of depleting the installation of its water.

If this test be available, opportunity should be taken of testing the alarm with tank pressure only. It will be found that it will take much longer for the gong to sound than it did when testing with the town's water or other supply, the reason being that the "bottled-up" pressure in the installation, previously referred to, will take longer to get down to

tank pressure. Serious notice, however, need not be taken of this, unless the time is so abnormally long as to suggest some obstruction in the down pipe from the tank. Of course, if the test has been made with town's water immediately before, the "bottled-up" pressure will be nil, and therefore, whilst testing with tank pressure, the alarm will operate in much less time than it did when making the first test.

PRESSURE TANK.

In cases where a pressure tank is adopted as one of the means of supplying the installation, the position of the tank is an important feature, and also its capacity. The Rules give particulars of the sizes required, the proportions of water and air, and the minimum air pressure to be maintained. The building in which the tank is fixed must be protected with sprinklers, and the tank should be placed as high as possible, preferably in the top storey, so that the air pressure to be maintained shall be as low as possible. High air pressures are difficult to maintain, and as all leakage must be made up there is a considerable strain on the apparatus when the pressure is much in excess of 100lbs.

The rules in regard to the initial minimum pressure to be maintained are so based that the last drop of water expelled from the tank shall be under a pressure which will give 15lbs. to the square inch on the highest sprinkler.

A gauge glass must be provided to show the level of the water in the tank, and the stop-taps on it should be kept shut. The reason for this is that they are liable to fracture, and, if left open, loss of air pressure and water would result, and possibly considerable damage ensue, as no alarm would be given by the gong, this part of the installation being, of course, below the alarm valve.

A pressure gauge or gauges (one to check the other) must be fixed on the tank, and the minimum working pressure clearly marked on the dial in red, and a note should be taken of the actual pressure indicated at the time of the inspection. It should be impressed upon the insured that a daily reading of the pressure and water level is desirable.

On the pressure tank a white-painted line should be drawn showing the level at which the water must be maintained.

The pumps for supplying air and water to the tank must be fitted with back-pressure and stop valves to prevent any risk of the tank losing its pressure back through the pump.

The stop valve on the delivery from the pressure tank must be secured "open" by a chain and padlock, and the drain pipe must be similarly secured "shut."

PUMPS.

Pumps must be of the duplex pattern—that is, having two water cylinders and two steam cylinders—and should be located so as to be easily accessible and safe from damage by fire and other sources. The water supply must be from some practically inexhaustible source.

Pumps may be automatic or non-automatic, but where the supplies to the installation consist of town's water or injector apparatus in conjunction with a pump, the latter *must* be on the automatic principle. That is to say, it must be constantly under steam and working slowly. These pumps can be set to work with a minimum pressure of steam, and to run so slowly as to render the working only just perceptible. The regulator should be set at such a point, say, about 85-90lbs., as will allow the pump to work efficiently. The opening of the $\frac{1}{2}$ -inch testing-cock to the alarm, or other cock provided for the purpose, will indicate at what pressure the pump will accelerate its action.

It is not absolutely necessary that a non-automatic pump should have its delivery pipe connected to the installation at a point below the main stop valve. It may be connected at the most convenient point in the installation, and, of course, into a pipe of not less size than the delivery pipe.

The water supply to the pump should be practically inexhaustible, and should be free from salt. If the water contain objectionable matter held in suspension, such as fibre, leaves, or twigs, measures should be taken (in the form of a sieve) to prevent such matter being forced into the sprinkler system. Note should be taken of the height the pump has to lift its water in the suction pipe, and a foot-valve (or retaining-valve), and also a priming connection, should be connected to this pipe. If the water supply to pump be above the pump level a foot-valve is, of course, not required, but a stop-valve,

padlocked and chained "open," should be fixed in the suction to enable an examination of the pump being made at any time.

The size of the steam pipe supplying the pump should be recorded, and also the position of the stop-valves thereon, which should be secured "open."

The minimum pressure of steam allowed to be maintained in the boilers will vary according to the size of the pump, but should never be less than 30lbs., assuming that the steam cylinders are four times the size of the water plungers, and not less than 40lbs. when the proportion is 3 to 1.

In the case of an automatic pump care should be taken to see that there is a full-sized "by-pass" round the automatic steam regulator.

At each side of the automatic regulator there should be a stop-valve fixed close to it, so that if necessity should arise to examine the regulator this can be easily done without disabling the pump. There must be a check valve on the delivery side of the pump to prevent the other supply flowing into it, and in the case of a non-automatic pump there must also be a stop-valve on the delivery.

It is not unusual to find a pump used for purposes in the mill other than the sprinkler service, such as for boiler-filling or grain-washing. It is desirable that this should be the case to a limited extent, as it keeps the pump in good working order.

A simple formula for finding the capacity of a pump will be found at the end of this paper, together with other useful information regarding water-heads and approximate pressures. For this table I am indebted to the kindness of Mr. J. S. Derbyshire, of the Phœnix Fire Office, Manchester.

HYDRAULIC INJECTORS.

Another recognised source of supply is that of the hydraulic injector apparatus, which is allowed to be used in conjunction with an elevated tank, or a pressure tank, or a town's main, or an automatic pump. This apparatus is used only where hydraulic mains are available, and the capacity of the apparatus must be the same as that provided for pumps. The water in the hydraulic main must have a constant pressure of 600lbs., and there must be a gauge fixed on the hydraulic con-

nection. The apparatus is under constant slow motion, and an indicator is fixed on it to show the number of strokes made. The operation of the apparatus is such that it should, when called upon, accelerate its speed in the same manner as an automatic pump. The water supply to the injector may be from a town's main or a suction tank. Briefly, the apparatus may be likened to an automatic pump, but, instead of steam being the motive power, in this case the power is the very high water pressure passing through a small orifice and creating a vacuum in the suction pipe, which draws the water from the town's main or suction tank, as the case may be.

Upon inspection, see that the combined stop-valve and check-valve on the suction from low-pressure supply are open, also that the stop-valve on the high-pressure supply to injector is secured "open" by padlocked chain. Test the accumulator ram by opening drip-valve on cylinder to see that the weighted accumulator will fall and rise. Test the working of the apparatus by raising the chain on the relief valve on delivery pipe, and note the pressure indicated on the delivery, and also the pressure on the hydraulic main. If the supply be from a suction tank, see that the ball-tap filling same is working, and that the stop-valve on such supply is secured "open."

AIR INSTALLATIONS.

Where installations are likely to be affected by frosts, they should be erected upon what is known as the dry-pipe system, or, as is now customary, the alternate wet and dry system. During the warm months of the year the installation is charged with water in the ordinary way, but in winter all the water is drained off, and pipes are charged with air at a pressure. In the event of fire, the air escapes through the open sprinkler, and is followed by the water. The provision of an air-valve is necessary in these cases, and this is fixed immediately above the main stop-valve. One of the air-valves on the market is constructed on the differential principle—that is to say, the upper side of the valve has a greater area than the under side, the area of the upper being generally eight times that of the lower.

After the installation is drained of its water, the air-valve is set, and air is pumped into the system. Theoretically, the differential air-valve enables 11b. pressure of air to keep back

8lbs. pressure of water, but it is usual to work to the proportion of one in four, so that, say, 25lbs. of air keeps back 100lbs. of water.

It is inadvisable to test the working of the air-valve in cold weather; to do so entails letting water into the installation, thereby incurring risk of frost, and also involves resetting the air-valve and pumping up air pressure, processes which necessitate some considerable labour. In modern installations provision is made for testing the operation of the turbine and gong with water in winter by means of a cock provided for the purpose.

In this connection I would remark that, wherever possible, installations should be erected on the wet system only, for it must be remembered that, in the case of dry-pipe systems, a space of a minute or two elapses between the fusing of sprinkler and the emission of water, during which time the fire, of course, is in progress. In all cases where installations are on the wet system care should be taken to see that frost cannot affect the installation, and especially in concealed spaces and blind attics. The sprinkler heads must be inverted, and all the distributing pipes should be inclined downwards towards the rising mains to provide that the pipes shall be properly drained of water when the time arrives to charge the pipes with air. Those portions of the installation which are below the level of the 2-inch drip near the main stop-valve should have drain-cocks specially provided, and these should be secured "shut" by a padlocked strap.

SPACING OF SPRINKLERS.

It is not my intention to enter into the details of the Rule dealing with the spacing of sprinkler heads; each case requires special consideration in accordance with the construction of the ceiling and roof. Broadly speaking, the sprinklers must be spaced (except under certain conditions) not more than ten feet apart, and those next walls and heavy ceiling beams not more than five feet therefrom, but in corn and rice mills these distances are diminished to eight feet and four feet respectively. All hoists, elevators, shoots, rope or strap races, non-fireproof w.c.'s, gearing boxes, and non-fireproof staircases (including the undersides) must be protected, and also all the spaces

between ceilings and roofs, either at the apex or sides of the buildings.

In almost every installation occasion arises where the provision of extra sprinklers, owing to the construction of the building or the placing of machinery or partitions, would improve the protection. Obviously, it is impossible to state here where and when such occasion will arise, but it may be generally stated that there should be no spot left unprotected where a fire might break out, or to which one might spread. Great care in making the inspection will indicate such points. I would repeat that sprinklers are not intended to extinguish conflagrations, but rather to check a fire in its earliest stage, and therefore it is necessary that every nook and corner should be provided with a sprinkler. This may not appear to be absolutely necessary at the time of the erection of a sprinkler installation, but a time may occur, owing to changed conditions in a risk, when such corners may be put to more or less hazardous use.

Experience alone, coupled with the exercise of common-sense, will teach the young Surveyor when to make requests for additional sprinklers, or for the alteration in position of those sprinklers erected.

In conclusion, I would advise every Surveyor to pay a visit to the works of sprinkler engineers, where he can examine the construction of the various valves, sprinkler heads, &c. He will be received with the utmost courtesy, and will come away much benefited, and with the feeling that his work in this department will have much more interest for him in future.

APPENDIX.

NOTES.

A Steam Fire Pump should be large enough to deliver the required volume of water, when working at a moderate speed, so that the possibility of a breakdown (while used for fire extinguishing purposes) may be reduced to a minimum.

To ascertain the capacity of a pump having one double-acting water ram, working at 150 feet travel (as required by rules). Let x equal the diameter of the water ram, then—

$$x^2 \times \frac{.7854 \times 150 \times 6.25}{144} = \text{capacity per minute.}$$

Example: Find the capacity of a double-acting water ram, 6in. diameter, and working at 150 feet travel—

$$6^2 \times \frac{.7854 \times 150 \times 6.25}{144} = 184.07 \text{ galls. per minute.}$$

For a single-acting ram of equal size, half that quantity . . . = 92.03 „ „

For a quadruple 6in. pump, twice the quantity . . . = 368.15 „ „

A simpler method is to multiply x^2 by $5\frac{1}{2}$, viz. :— $6^2 \times 5\frac{1}{2} = 184$.

A deduction of 20% is usually allowed for friction, but if the “lift” is great, and the delivery pipe long and provided with many elbows, a larger deduction must be made.

TABLE showing the requisite number of strokes (per minute) to give 150 feet travel per minute for each double-acting plunger.

Length of Plunger Stroke in inches.	No. of Strokes required per minute to give 150 feet travel.	Length of Plunger Stroke in inches.	No. of Strokes required per minute to give 150 feet travel.	Length of Plunger Stroke in inches.	No. of Strokes required per minute to give 150 feet travel.
1	900	11	81.81	21	42.859
2	450	12	75	22	40.909
3	300	13	69.231	23	39.1304
4	225	14	64.285	24	37.5
5	180	15	60	25	36
6	150	16	56.25	26	34.6154
7	128.571	17	52.941	27	33.3
8	112.5	18	50	28	32.1428
9	100	19	47.369	29	31.0344
10	90	20	45	30	30

N.B.—A single-acting water cylinder requires double the above number of strokes to give 150 feet travel per minute.

APPROXIMATE CAPACITIES OF PUMPS

(Not allowing for Friction)

Taken at the rate of 150 feet travel per minute, and allowing $6\frac{1}{2}$ gallons of water to the cubic foot.

Diameter of Water Cylinder in inches.	SECTIONAL AREA OF WATER CYLINDER.		CAPACITY IN GALLONS PER MINUTE.		
	Sq. inches.	Equivalent in sq. feet.	One Single-acting Ram.	One Double-acting Ram.	Two Double-acting Rams.
1	·7854	·00545	2·55	5·10	10·21
1·5	1·7671	·01227	5·75	11·50	23·00
2	3·1416	·02181	10·22	20·44	40·89
2·5	4·9087	·03408	15·97	31·95	63·90
3	7·0686	·04908	23·00	46·01	92·02
3·5	9·6211	·06680	31·31	62·62	125·25
4	12·5664	·08726	40·90	81·80	163·61
4·5	15·9043	·11044	51·76	103·53	207·07
5	19·6350	·13635	63·91	127·82	255·65
5·5	23·7583	·16499	77·33	154·67	309·35
6	28·2744	·19635	92·03	184·07	368·16
6·5	33·1831	·23043	108·01	216·02	432·05
7	38·4846	·26725	125·27	250·54	501·09
7·5	44·1787	·30679	143·80	287·61	575·23
8	50·2656	·34906	163·62	327·24	654·48
8·5	56·7451	·39406	184·71	369·43	738·86
9	63·6174	·44178	207·08	414·16	828·33
9·5	70·8823	·49223	230·73	461·46	922·93
10	78·5400	·54541	255·66	511·32	1022·64
10·5	86·5903	·60132	281·86	563·73	1127·47
11	95·0334	·65995	309·35	618·70	1237·40
11·5	103·8690	·72131	338·11	676·22	1362·45
12	113·0970	·78539	368·15	736·30	1472·60

WATER HEADS AND APPROXIMATE PRESSURES
 Taking 1 lb. pressure per square inch for every 2·3 feet head of water.

"Water Head" in Feet.	PRESSURE IN LBS. PER SQUARE INCH.										"Water Head" in Feet.
	0	1	2	3	4	5	6	7	8	9	
0	—	·43	·87	1·30	1·73	2·17	2·61	3·04	3·48	3·91	0
10	4·34	4·78	5·21	5·65	6·08	6·52	6·95	7·38	7·82	8·26	10
20	8·70	9·12	9·56	9·99	10·43	10·86	11·30	11·73	12·17	12·60	20
30	13·04	13·47	13·91	14·34	14·78	15·21	15·65	16·09	16·52	16·95	30
40	17·39	17·82	18·25	18·69	19·12	19·56	19·99	20·43	20·86	21·30	40
50	21·73	22·17	22·60	23·04	23·47	23·91	24·33	24·77	25·21	25·64	50
60	26·10	26·52	26·95	27·38	27·82	28·25	28·69	29·12	29·56	29·99	60
70	30·42	30·86	31·30	31·73	32·16	32·60	33·04	33·47	33·91	34·34	70
80	34·79	35·21	35·64	36·08	36·51	36·96	37·38	37·82	38·25	38·69	80
90	39·13	39·55	39·99	40·42	40·86	41·29	41·73	42·16	42·60	43·03	90
0	0	1	2	3	4	5	6	7	8	9	

In calculating pressures from higher altitudes than those given in the above Table, remove the decimal point accordingly, viz. :—
 4 feet head of water gives = 1·73 lbs. per square inch.
 40 " " = 17·39 lbs.
 400 " " = 173·90 lbs.

THE UTILISATION OF PEAT.

By H. S. GIBSON.

*A Paper read before the Insurance Institute of Ireland,
19th February, 1907.*

THERE are bog and marsh lands in most countries, but what we would wish particularly to consider to-night is the possible utilisation of the peat composing over two million acres of the land of Ireland.

I do not, of course, attempt to appear before you as an authority on the subject, but such information as I have been able to glean I bring to you in the hope that my remarks may be found of some interest.

The fertility of that portion of the soil of Ireland under cultivation has long been recognised, and that fertility is no doubt owing largely to the humidity of the climate, the moisture-laden breezes from the Atlantic combining with the modifying influences of the Gulf Stream to produce a more prolonged period of vegetable growth than is enjoyed by other countries in practically the same latitude. But a glance at a geological map of the country suffices to show us that a very considerable area is in the meantime incapable of cultivation, and it is to the probable latent possibilities buried in the bog and marsh that I would beg to ask your attention.

Bogs would appear to have their origin in the following manner:—Water pools and springs become surrounded by grass, moss, and weeds during normally dry seasons; in wet weather the quantity of the water naturally increases and loosens the earth around the roots of the vegetation, lifting up and actually floating the vegetable matter. With the next dry season the vegetable matter is left stranded high and dry, but drowned and dead, forming a matted mass of fuzzy, stringy material. On that mass new vegetation springs, and the whole is again floated and killed by the water in the next rainy

season, the process being repeated again and again until the water-springs or pools are entirely covered up, and what is known as a "quaking bog" is formed. In the meantime, the lower layers of the roots, moss, and grass rot and become decomposed by the action of the water, acquiring in time an intense blackness, forming Turf Bog or Peat, which, cut into the small blocks so familiar to us, is dried and used in many parts of the country as fuel. I fancy that the heavier and probably more incombustible portions of the material sink, and are washed away by the water in the process of the formation of the bog, the carboniferous and oily portion remaining floating on the surface, thus imparting to the Peat its inflammability. That Peat would ultimately turn into something very like coal if left to itself through the ages is a matter of little doubt, as in coal we have the evidence of a very ancient vegetation, but the process might spread itself over a period of a million years or so, and such a utilisation of Peat would scarcely benefit us. But, as you are aware, some coal-seams are merely ancient Peat-beds, in support of which statement the under-clays of the coal-seams appear to be very similar to the clays found at the bottoms of the bogs, both kinds of strata being deficient in alkalies, owing probably to the fact that the plants extracted the alkalies for nourishment.

A very peculiar feature of bogs is that they are often higher than the surrounding cultivated land, and it is difficult to assign a cause for that peculiarity. It might be suggested, however, that the spring or pool of water which originally caused the formation of the bog is generally situated near the centre, and that the dilation of the body of the bog caused by the influx of water during wet seasons exercises a greater upward pressure at that point than at the sides, where the semi-liquid Peat dilates along the line of least resistance until it meets with an obstacle. Howsoever that may be, there remains the fact that the difference in level generally causes the disastrous "moving bogs," instances of which, attended by fatal results, we have had in Ireland during recent years.

That Peat takes a very considerable time to form is indicated by the nature of the things found in it from time to time. The remains of the extinct Irish Elk, or Giant Deer, are often found in the marls beneath the Peat-bogs in Ireland, as also weapons of the Stone Age and ancient Irish ornaments. In a

bog in County Limerick, some time ago, two human skulls were found with the teeth locked, as if the men died biting, and there were two arrow or spear heads found near them. That all indicates a considerable antiquity, and if, as I am informed, traces of lake dwellings have been found in the bogs, the time of the birth of some of them might be placed in a comparatively recent geological, but remote historical, period, and they probably date from about the time of the advent of man.

In an old *Natural History of Ireland*, a writer, in speaking of the bogs, says:—"They are a shelter and refuge to Tories and thieves, who can hardly live without them." Our forefathers did not always err on the side of politeness. There is no doubt, however, that during the ever-recurring inter-tribal wars which were waged so consistently during the early periods of Irish history, the bogs afforded refuges from their pursuing enemies to the hunted remnants of the vanquished tribes, and at a later period, during the reign of Queen Elizabeth, they gave shelter to the Desmonds and others, and rendered military expeditions liable to ambushes, making their progress difficult.

DRAINING.

At the beginning of the 19th Century many schemes were promulgated in Ireland for draining the bogs, and making the land thus reclaimed fit for agricultural purposes; and although there are records of endless surveys made by painstaking surveyors and engineers with that object in view, no very practical result appears to have followed, except to the surveyors and engineers, whose resultant fees were substantial enough. Yet one cannot help thinking that systematic draining, combined with judicious manuring, would ultimately result in transforming the bogs into good farm land. But it would take a long time—a very long time—and the expense would be incalculable. And what has posterity done for us? At the bottoms of some of the apparently more recently-formed bogs very ancient ploughs have been found, and traces of furrows and ridges, so that it is probable that whilst the ancient inhabitants were interesting themselves more keenly in hunting and fighting than in agriculture, they allowed the bog to encroach on their holdings by neglecting such system of drainage as they may have been cognisant of at the time. But

it is also possible that a moving bog—that silent, irresistible, creeping horror—overwhelmed their plots, and the fact that no human remains were found where the ancient signs of agriculture appear would seem to indicate that the people escaped by flight.

ANTISEPTIC QUALITIES.

The preserving and antiseptic qualities of Peat are well known. Some time ago, in a Peat-moss in the South of Scotland, there was found the complete preserved body of a soldier dressed in the uniform of the troops employed against the Scottish Covenanters, and if this paper were addressed to a less prosaic and more romantic audience one might be tempted to enlarge on the circumstances through which he met his end: how he dismounted and tethered his horse on the firm ground, pursued on foot the wily Covenanter, to whom the Peat-bog was doubtless well known, over the quaking morass, until, tempted by his quarry into the slough, he was enveloped in its clutches, and gradually and horribly disappeared.

The bog-oak with which we are so familiar in the shape of the tobacco-pipes, lucky pigs, and brooches, beloved of the holiday-maker, gives us an instance of this preserving and antiseptic quality, with which I shall have occasion to deal later in referring to the peat moss litter and surgical bandage-making from Peat.

Large lumps of ancient butter have often been found in bogs, and it is possible that the former inhabitants of the country, being aware of its qualities, made use of the bog as a kind of primitive cold storage warehouse, but it is quite as possible that their object was to hide their wealth from the eyes of their acquisitive neighbours. At all events, the butter found now is of little use to anybody, and a writer, in a communication to the Royal Society of Ireland so far back as 1740, on the subject of bogs, speaks of a caché of butter found in the bog as “not fit to be eaten, yet served well enough to grease wool.”

A friend writes to me that he sampled a piece of bog butter, and it tasted like a mouthful of sand.

PEAT-CUTTING.

It seems somewhat presumptuous to speak to an Irish audience on such a matter as the ordinary cutting and pre-

paring of Peat, yet have I known London people who had never been to St. Paul's, Dublin people to whom the North Bull was unknown, and citizens of Edinburgh who had but hazy notions of the whereabouts of St. Giles'. The fact that it is to those things with which our eyes are familiar from day to day that we pay least attention (no doubt on account of their familiarity) must plead my excuse.

Peat turves, then, are cut in summer, the work generally commencing about the beginning of May, and being carried on until about the end of August. The work could not be carried on in winter, as frost disintegrates and crumbles the Peat. A long-bladed spade is used, and the peats are generally at first placed singly on the top of the peat-bank to dry. After being turned over a few times the peats are built into small heaps of three or four sods each, as it seems that at this stage larger heaps would crumble. Later on they are built into heaps standing about the height of a man, and finally they are piled into large stacks, generally placed near the house, where they are to be used for fuel. This is the oldest known process of preparing Peat for fuel, and seems to have been carried on continuously since the Neolithic age. I should state here that in the process of drying the Peat shrinks considerably, as when it is first cut from 70 to 90 per cent. of its bulk is water. It will be understood, therefore, that 100 cubic feet of wet Peat diminishes when prepared for winter firing to about 25 to 30 cubic feet.

IRON IN BOG.

It is somewhat astonishing to find that iron ore occurs in bogs, and that in the early part of the 18th Century it seems to have been used for iron manufacture. I cannot trace, however, that it now exists in sufficient quantities as to be used in smelting operations at a profit; and even the old iron founders were not content with the quality of iron it produced, having to mix the bog ore with other ores to produce good iron. The presence of the ore is probably due to the water of the original spring or pool which formed the bog having been impregnated with salts of iron. A very considerable quantity of the ore is still obtained, however, in Queen's County and in County Donegal. It is sold to gas works for gas purification.

PEAT MOSS LITTER.

The top layer of a bog is composed largely of moss known to botanists as *Sphagnum*, and it is of that moss, or *Sphagnum*, that the useful and hygienic peat moss litter is made. The manufacture from Peat of bedding for cattle and horses was, I think, the first of the peat industries started during recent years consequent upon the revival of interest in Peat, and has fought its way against prejudice to a position of assured success as a commercial product. A few years ago peat moss litter was looked upon with coldness and dislike, and was accused of afflicting the animals bedded upon it with all sorts and conditions of diseases, from broken wind and roaring to hoof troubles. Farmers especially disliked it, but it is questionable if their dislike was quite disinterested, anxious as they doubtless were to preserve a good market for their straw. Now that is all changed, and to-day in many of the best-equipped stables and cattle-sheds peat moss litter is used in preference to straw for bedding. And I think, from a Fire Insurance point of view, that is a distinct improvement, for a lighted match might be thrown down, or a broken-paned stable lamp might be placed on the bedding without danger of a conflagration, whereas the careless use of lights in stables and cow-sheds with straw-bestrewn floors has been the cause of many a heavy loss to the Fire Insurance Companies. The advantages claimed over straw as a bedding by peat moss litter are the more absorbent and antiseptic qualities of the latter, in addition to its providing a healthier bed for the animals at a much lower cost. Straw is a capital fodder, and costs, according to quality of harvest and season of the year and district, from 22s. to £2 per ton, and it is, therefore, very uneconomical to make use of it as a bedding, whilst peat moss litter (a much better article for the purpose) can be purchased at about 18s. per ton. Another argument in favour of peat moss litter is that animals afflicted with depraved appetites, resulting in their eating defiled straw beddings, are usually cured of their pernicious habits when their stalls are bedded with peat moss litter. In stables and cattle-houses where the litter is used the floors are dry (provided ordinary cleanliness is maintained), owing to the fact that the moss is capable of absorbing about nine times its own weight of liquid, and

there is no smell noticeable in the atmosphere. Nor has the stable manure, when litter has been used, proved to be less valuable for horticultural and agricultural purposes than manure produced from straw-bedded stables. The manufacture of the litter is simple, the air-dried material being first torn up by a teaser or "devil," then passed to a sieve, finally passing to bale-pressing machines, after which three wires are sewn round each bale, and the material is ready for delivery to customer. The dominating fire hazard of this process would be the "devil," or teaser, as, unless carefully overhauled and hand-picked, the material fed into it might contain stones, pieces of old iron, or even hard pieces of bog oak, which, striking on the teeth of the machine, would almost inevitably cause sparking. It would be desirable, therefore, to isolate the machine in the best way practicable from the remainder of the factory. Lighting arrangements would require also to be carefully seen to, owing to the prevalence of dust from process, and explosion risk similar to that to be apprehended in coal mines, corn and cotton mills, might be feared. Incandescent electric lamps would seem to be the safest for the purpose. Where a peat moss litter factory is established at or near a bog, artificial drying of the Sphagnum might be resorted to at little cost, as the ovens or kilns could be supplied with peat fuel; but there seems little necessity for such an arrangement, as the moss can be thoroughly air-dried in open-sided sheds.

At the present time we appear to get most of our peat moss litter from Holland and Germany, and surely that is a state of things which need not exist, more especially as it is now found that the material can be produced in Ireland in quite as good quality as the Dutch and German products, and the fact that the raw material exists in inexhaustible quantities in positions contiguous to the railway and canal systems enables it to be delivered to the consumers at a lower price than the imported article. Railway rates are a very serious consideration in Ireland, but as against these the Dutch have to pay about 12s. 6d. a ton freight from Rotterdam to Dublin, and up to 17s. 6d. per ton from Rotterdam to Belfast. So that even under Free Trade conditions the business, at least for home consumption, ought to be captured here. But the trade need not be entirely dependent on the railways, and were the canals of Ireland developed, and their somewhat unfinished and

broken system made uniform, and linked up by branches, the peat moss litter could be delivered at distributing centres at probably half the cost of railroad carriage. For heavy and non-perishable goods traffic, it is an acknowledged fact that canal transit is the most economical of all systems of inland carrying, there being no expense involved for tear and wear of rails, rolling-stock, and permanent way. It is calculated that, given equal tonnages transported equal distances, carriage which would cost £200 by railway would cost only £70 12s. by canal, showing an economy in favour of the canal of 65 per cent. The French and German Governments have long ago recognised this fact. In these countries the canals are controlled and have been developed by the States, with the result that innumerable industries have sprung up along the banks of the magnificent network of water-ways, and minerals which lay undisturbed before the construction of the canals have been profitably exploited. I do not know if any system of toll exists on the German canals, but in France there is no charge made for the passage of boats and merchandise even through the locks at night, and the canal is as free to the boat as the highway is to the private carriage.

PEAT DUST.

In preparing peat moss litter a large quantity of peat dust is obtained, which passes through the sieve in one of the final processes. I have already spoken of the antiseptic qualities of Peat, and in utilising the dust as a packing material for such commodities as eggs and fruit these qualities are invaluable. Molassine, the famous German cattle food, contains, it is said, about 20 per cent. of peat dust mixed with molasses, and the advantages of its use are well established. In dairy farms where the food is used, it is found to keep the animals in health, and milk cows fed on it give an increased quantity of milk. There seems to be no reason why the manufacture of the food should not become a profitable industry in Ireland. For sanitary purposes the dust is useful, its power of absorbing fluids, combined with its disinfecting qualities, rendering it an admirable material for use in latrines in districts where there is no water supply.

FIRE-LIGHTERS.

Some six or seven years ago the manufacture of fire-lighters from Peat was commenced here, and very excellent fire-lighters they were, proving commercially a success. From the point of view of a Fire Insurance Company, however, the hazard of fire involved in the processes through which the materials used in the manufacture pass rendered acceptance of the risk practically impossible, as these features seemed to proclaim that the occurrence of the inevitable fire could not be long delayed, and was merely a question of time. The process is briefly as follows:—Light turf, the stringy, fibrous material lying near the surface of the bog, is cut into sections by power-driven circular saws, and then passes to power-driven boring-machines for the perforations necessary for air draught. The neat little sections are then soaked in mineral oil, and afterwards immersed in a steam-heated resin tank. After drying they are made up in packets for retailers. It is unnecessary to enlarge to an Insurance audience on the risk of fire involved in such a manufacture, in addition to the possibilities of spontaneous ignition of finished material, the probable presence of inflammable vapours, and the potentialities of a lucifer inadvertently trodden upon. Suffice it to say that about a year ago the prognostications of the Fire Insurance Companies were found to be correct, the turf fire-lighters proved their excellent quality, and the only factory for the production of the material in this district (so far as I am aware) was burnt out. That fact, however, is no argument against the utilisation of Peat in the manufacture of fire-lighters, but only goes to show that buildings in which such processes are carried on should be carefully isolated from all other buildings—like gunpowder, cordite, and gun-cotton factories—and that the acceptance of the fire insurance risk should not be lightly undertaken.

PAPER FROM PEAT.

Paper is made from Peat, and as the Press of the world, in distributing its intelligence, uses up some eleven million tons (more or less) of paper every year, there seems to be a good market for the article. So far, the manufacture of paper from

Peat has been confined to the preparation of brown packing qualities, but doubtless with further experience will come methods of bleaching and refining the material. The brown packing paper produced at the present time, in addition to its strength, retains the antiseptic qualities of the Peat, and forms an excellent protection for the articles packed in it against the ravages of insects. I do not say that it would be proof against the attacks of the red and white ants found in certain parts of the world, which devour saddlery and gun-stocks left unheeded for a short space of time, but the paper would certainly repel the advances of moths upon furs, and should prove invaluable to the fair possessors of expensive sealskin coats, and to furriers. In making the paper the more fibrous portion of the peat is used. The Peat is placed in steam-heated revolving boilers, with certain chemicals, passes to a teasing-machine, then to beating-machines, strainers, paper-machine, and finally to the calendering machine and reeling machine. In fact, the process is practically the same, except in the very initial stages, as is to be observed in any paper mill manufacturing paper from waste paper, rags, or ramie, and the hazard of fire would not appear to exceed the normal risk of such processes. It has been suggested that a mixture of hemp with the Peat pulp might be found useful in the manufacture of paper from Peat. As our climate permits of the production of the best qualities of hemp, there would seem the possibility of a peat paper industry stimulating the resuscitation of hemp-growing in Ireland, our supplies of that material at the present time being largely imported. The cost of raw materials used in the manufacture of peat paper being much less than that of waste paper and rags ordinarily used in the manufacture of paper, the Peat paper can be placed on the market at a very moderate price.

CLOTH BANDAGES AND ANTISEPTIC DRESSINGS.

For some years past the manufacture of cloth from Peat has, on the Continent, been profitably carried on, the cloth being composed of about 75 parts of Peat wool to 25 parts of sheep wool or cotton. There is now a well-established factory producing Peat cloth and surgical bandages and dressings in London, to the kindness of the owners of which I am indebted

for the samples exhibited. The cloth shown is called "Petanelle," and the dressing is known as "Petanelle Wool Surgical Dressing." These fabrics contain from 15 per cent. to nearly 100 per cent. of Peat. I have here some compressed sheets of pure surface Peat, which is also used in making up surgical dressings. These dressings are soft, springy, and anti-putrescent, and the medical journals praise their qualities in no stinted terms. The dressings never felt or become sour or malodorous, no matter in whatsoever amateurish style they may have been applied, qualities which should impress themselves especially on "first-aiders." The bandages and dressings are now coming into use in some of our largest hospitals, and are no new thing in the German and French military hospitals, where they have been known and appreciated for a considerable time. The processes through which the materials pass in the manufacture of the cloths, after the teasing of the Peat, and the mixing with wool, silk, or cotton, according to the nature of the cloth to be produced, do not seem to differ in any great degree from those carried on in textile mills working on wool or mixtures, and should the industry, as it is earnestly hoped, become successfully established in Ireland, we may see in time the issue of a Peat textile tariff based partly on the provisions of the woollen mills tariff and partly on those of the tariffs for cotton and flax mills. All sorts of cloth can be made from the material—from boating flannels to ladies' dress goods and wall tapestries. As a clothing for athletes, the Peat cloth is claimed to be unsurpassable, the material absorbing all the particles of organic waste given off in perspiration, so that the skin does not become sodden beneath the flannel.

In these days of the ubiquitous microbe, medical men often speak of the dangers hovering around us when, the day's work done, we seek the recuperative influences of sleep. They warn us that the beds we lie so peacefully upon contain the germs of fevers, plague, cholera, and almost all the ills that flesh is heir to; and whilst we, awestricken and terrified, hearken to the words of wisdom, we are filled with wonderment that the human race should have survived until our time. And although the strictures of the doctors do not appear to be altogether deserved by the stuffing materials found in the mattresses, &c., in use in fairly well-to-do households, yet who

can deny that the common flock so much in use for bedding amongst the poorer classes of the community (on account of its cheapness) is not the most health-giving substance that can be found, coming as it does in the form of rags gathered from the ends of the earth—from “Greenland’s icy mountains to India’s coral strand.” Any person who visits the poorer districts in our large cities cannot fail to notice that the materials used for bedding by the very poor are appallingly destructive to health, and this deplorable condition of affairs could, I feel sure, be largely remedied by the use of properly-prepared Peat fibre for stuffing bedding, couches, and cushions, as the Peat fibre could be produced more cheaply than the flock.

Before leaving the subject of the health-giving properties of Peat, I might say that the mud baths which are in use extensively in some parts of the Continent, and which, I believe, are highly recommended by medical men, are merely electro-peat baths, electrodes being inserted at each end of the bath, in which is placed the mud—a mixture of Peat and certain mineral waters—and the bather. People who have tried the baths at Marienbad say that there is nothing like them, and I can well believe the statement. We may, therefore, see the establishment of electro-Peat baths in Ireland, and the revival of the glories of Lucan Spa.

BUILDING MATERIAL, EARTHENWARE, AND CEMENT WOOD.

In Denmark, building-bricks composed from a mixture of fibrous and granulated Peat and clay are made and used in building construction, and it is claimed for these bricks that not only are they 50 to 75 per cent. lighter than ordinary bricks, but are remarkable for their non-conducting qualities of heat, cold, sound, and electric currents. In burning the bricks the peat seems to be altogether consumed (the process of consumption being gradual), so that the finished brick (I have not seen any) must be very porous. For outside work the bricks must be coated with cement. Partitioning, ceilings, and linings are made of the same material, and the respective strengths required can be attained by varying the mixtures. Roofing tiles covered with a waterproofing substance are also made from the material. It will be observed

that building materials could hardly be called "Peat bricks or tiles, &c.," as the Peat has actually been burned away and only the clay left. A cement has been made from granulated Peat in conjunction with certain other materials, and it is claimed for it that it stands, in three days, as great a crushing strain as Portland cement in 18 days. A cloth saturated with this cement will perfectly stop a leak in a hot-water pipe. It can be run into moulds to produce articles of various uses, and can be used as a packing for boilers and steam pipes.

In America a patent has recently been obtained for the production of building material from naturally-moist Peat with addition of *dry* cement. The mass is very durable, the fact of the cement drawing the moisture necessary for its hardening from the Peat resulting in close union and solidification of the constituent parts. The substance prepared in this way is said to possess great strength and capacity for resisting the action of the atmosphere.

Artificial wood is made from Peat mixed with plaster of Paris and a small quantity of lime, and subjected to hydraulic pressure, after which the blocks or plates are air-dried and coated with oil or a solution of resin in spirit. The material thus formed can be worked with ordinary wood-working tools.

In Germany, I believe, experiments have been carried on with success in the preparation of a substitute for asphalt from Peat mixed with iron containing refuse from aniline manufacture. The mixture is placed in a boiler and softened by heating, and thereafter pressed into blocks.

DISTILLATION OF PEAT.

The production of charcoal from Peat was at one time carried on in Ireland to a limited extent, the charcoal being sold to the owners of bloomeries or iron foundries, and in an old Natural History of Ireland I find a writer advising the heads of households to have pits dug in the floors of their houses where the glowing unconsumed ends of Peats remaining after the family cooking operations had been completed might be thrust, the holes to be then covered with large stones. The resultant charcoal was to be sold to the ironfounders, and when one considers that to-day the best bar-iron is produced by the use of charcoal, the advice would not seem to have

been out of place. Peat charcoal yields a greater heat than natural Peat, and the French have long recognised that fact, having been producing for many years the charcoal both for household and culinary processes, and for iron-smelting. Formerly the charcoal was obtained by processes similar to that made use of in obtaining wood charcoal—viz., by burning the Peat in the open air in piles or stacks, in pits or in brick or stone chambers, but now, owing to scientific knowledge and modern improvements in the processes, the bye-products obtained are as valuable as the charcoal. It has been estimated that the products obtained from the distillation of 100 tons of Peat are as follows:—

- 35 tons charcoal.
- 1 ton of acetic acid.
- 70 gallons of naphtha solvent.
- 6 gallons paraffin oil.
- 1½ tons sulphate or ammonia.

The value of these products would probably be about £100, whilst the cost of production might be about £45, leaving a profit of £55. It is needless to enlarge upon the numerous uses to which these bye-products can be put. A soap has been produced from certain of the products which is said to be invaluable for use in cases of skin disease, and efficacious sheep dips and smear for sheep scab have been manufactured from the distillates. Nearly 20 years ago there was a factory in Brazil producing 80 tons of solid paraffin from Peat per month.

ARTIFICIAL COAL FROM PEAT.

Not only can charcoal be obtained from Peat, but by a process at work at Kilberry Peat Works, near Athy, an excellent substitute for coal is obtained. This Peat coal is smokeless, leaves no clinkers, the only residue being an impalpable brown ash. It would seem, therefore, that at last a remedy for the smoke nuisance in large cities is to hand. The product is clean to handle, stacks well, does not crumble, can be transported without material loss, and improves by keeping. The manufacture of fuel briquettes from Peat has been attempted in years gone by, but until the discovery of the Bessey process has met with but indifferent success, owing

to the fact that Peat, no matter how cut up, pulped, squeezed, and dried, still retains its property of absorbing moisture from the atmosphere, and the product ultimately reverted to the state of a spongy substance impregnated with water. That state of affairs is now considered to have been due to the fact that all the cutting, pulping, and squeezing processes did not break down the infinitesimal cells of which the Peat is composed, cells so small that the one-hundredth part of an inch contains several thousands. These cells contain certain chemical bodies, the release of which amongst the other component parts of the Peat, it has been found, causes the Peat gradually to contract and harden and become a substance having the properties and attributes of coal. At the Kilberry Peat Works these cells are broken up by passing an electric current through the Peat. The process is as follows:—A powerful grab placed on a floating pontoon excavates the Peat and dumps it on to small trolly-cars of an electric tramway, which convey the material to the factory. The Peat then passes to a hydro-extractor, where it is subjected to an enormous pressure between rollers, being reduced in the process to about one-third of its original bulk. The material then falls into an electrifying machine, where, on the switching on of the electric current, the minute cells previously mentioned are broken up by the electrolytic action, which not only frees and distributes amongst the bulk the chemical contents of these cells, but enables a further quantity of water to be eliminated in the second hydro-extractor, into which the Peat now descends. A bucket-conveyor then takes the material to the kneading-machine, consisting of a huge pan in which revolve great steel rolls, which puddle the Peat into the consistency of dough. Another conveyor in turn takes charge of the stuff, and discharges it into the hopper of the moulding-machine, where plungers force the plastic Peat through shapes, whence the soft bricquettes are delivered to a final conveyor and carried to the storage sheds, where they are stacked to dry. No heat is used in drying, the bricquettes rapidly contracting and drying under the influence of the impregnated natural chemical agents. The time occupied by the processes, from the excavating of the Peat until the delivery of the bricquettes at the drying sheds, is about two hours, whilst at the end of from 10 to 20 days' storage in the

sheds the bricquettes have become similar in texture to coal. It is equal to Scotch and American coal, but is slightly inferior to Welsh steam coal. The cost of production works out at, I believe, about 5s. per ton, which is much less than coal can be delivered at the pit mouth. There would appear, therefore, to be a great future for the invention, more especially as the material can be worked in all kinds of weather, whereas ordinary Peat-cutting is restricted to the summer months. Experts differ as to the period which may elapse before our mineral coal-fields are worked out, but at the present rate of raising and exporting we seem only to have sufficient for our requirements for from 150 to 200 years, and it is to the interest of the public generally to anticipate such an exhaustion and to support an industry which supplies an equivalent fuel. Now, a worked-out coal seam does not reproduce itself. Owing to the productive and recuperative powers in bogs, Peat in some districts increases in thickness each year 5 or 6 inches, so that in excavating arrangements might be made for a continuous renewal of the Peat in such a manner that exhaustion of the supply need not be feared.

Only yesterday evening I received by post, through the kindness of Mr. A. B. Lennox, Newcastle-on-Tyne, some particulars of a new process for the production of peat coke and peat charcoal which is in work in Russia, Germany, and Upper Bavaria. It is the invention of Herr Zeigler, and consists in coking dried Peat of 20 to 25 per cent. moisture in vertical retorts, in which the uncondensable gases obtained are used for heating the retorts.

The cut Peat is at first air-dried, reducing the moisture to about 50 per cent., and is then placed in a drying chamber heated by hot air. The dried Peat, which still contains about 20 to 25 per cent. of moisture, is then placed in the retorts, which are so arranged that they require only an initial heating, being afterwards heated by gas generated from the Peat.

By this method is obtained either Peat coke or Peat fuel, according to arrangement, the Peat fuel passing the retorts more quickly than in the case of the coke.

The respective products are as follows:—

	Per Cent.		Per Cent.
Peat Coke, -	33	Peat fuel, -	45
Tar, -	4	Tar, -	2
Tar Water, -	41	Tar Water, -	38
Gases, -	22	Gases, -	15

By further distillation there is obtained from the bye-products paraffin scale, sulphate of ammonia, acetate of lime, and methyl alcohol.

I have endeavoured to describe to you some of the articles produced from Peat and the processes relative thereto, and I would ask your attention only for a little while longer to the consideration of the further possibilities of the utilisation of the bog lands.

PEAT DUST-FED BOILERS.

In speaking of Peat moss litter I mentioned the fact that a considerable quantity of dust is evolved in the course of its manufacture, and that that dust is put to a variety of uses. The successful firing of steam boilers by means of coal dust mixed with air has been accomplished in London, and the process is briefly as follows:—Coal dust is pulverised and carried by worm-conveyor to a metal hopper placed in front of the boiler; under the hopper is a feeding apparatus specially regulated leading to the suction of a fan, where the powdered coal is mixed with air, and finally conveyed by a metal pipe into the furnace, which is a combustion chamber of fire-brick, with flues lined with similar material. None of the ordinary bars, fire-boxes, and plates are used in the furnace, but in each of the flues a special bridge and baffle are placed. To start the fire in the furnace a small quantity of oily waste or wood is lighted, and the fan being rotated by means of a small gas-engine, the charge of coal dust and air immediately ignites. The brickwork soon attains white heat, and the combustion is kept up. The effect, therefore, is that of an immense Bunsen burner, and perfect combustion and smokelessness are ensured. Coal costing about 12s. per ton is used, the additional cost of pulverising being from 1s. to 1s. 2d. per ton. To ensure a comparatively similar degree of smokelessness and efficiency with the use of an ordinarily constructed furnace; the best Welsh

coal, costing from 24s. to 25s. per ton, would require to be used, so that the new system is well worthy of consideration. Now, it would seem that well-dried Peat dust might be made to act as efficiently as coal dust under similar conditions, and as an unlimited supply of Peat dust can be obtained at small cost there is apparently a material lying within easy reach of our power-consuming plant which would not only give an increased heating efficiency at less expense than coal used in ordinarily-constructed boiler furnaces, but the burning away of fire-bars, the accumulating of clinkers, and the smoke nuisance would be things of the past. So far as I know, no Peat dust boiler-heating apparatus has yet been put upon the market, but powdered Peat, mixed with air, has been in use as a heating agent in Sweden for some years, where it was found that the contents of a crucible consisting of raw material for glass manufacture was liquified in about 4 hours, as against 12 hours by ordinary coal-heating. In modern glass bottle works, the ovens, or furnaces, are heated by crude coal gas and air, and an adaptation of Peat-dust firing in these furnaces would, I think, tend to very considerable economy in production.

GAS-PRODUCER PLANT.

When gas-producers for power plant were introduced a few years ago, Welsh anthracite coal was used as fuel, as it was considered (and rightly) that imperfectly purified gas from bituminous coal would soon interfere with the free working of the engines supplied, as the cylinders would clog owing to the condensing of the tarry vapours from the gas. Now, with continued improvements in generators, condensers, scrubbers, and washers, common bituminous coal slack, obtainable at about one-fifth of the cost of anthracite coal, can be used with almost as good results as is obtained by the use of anthracite. About 70 per cent. of the calorific value of the fuel used in producers is represented in the gas passing into the purifying plant, and experience has shown that the gas-producer develops the most economical artificially-produced power known, except, of course, the waste gases from blast furnaces. In the use of steam engines a large proportion of the heat has to be given up by the fuel in converting the water into steam, with the

result that power developed does not represent more than possibly 15 to 20 per cent. of the heat-energy contained in the fuel. As power-gas plant is a comparatively recent invention, and as its progress and development during the past few years have but few parallels in the history of engineering, I may be allowed to say a few words descriptive of the suction gas-producer, although you are no doubt all familiar with the machine and its working. A suction gas-producer, then, is a machine from which a gas-engine sucks up its motive power. It consists of a generator, on the top of which is placed a coal feed hopper with suitable air-tight valves. Attached to the generator by piping is the coke scrubber, through which the gas passes to the purifiers, and finally to the cylinder of the engine. The gas may be produced with or without the addition of water, according to the make of the machine, but if water is introduced the mixture of gas and air available for use in the engine is more powerful, as the heat splits the water into its constituent parts, which ultimately go to enrich the gas. A pipe from the producer to the outside atmosphere supplies the necessary air. To start the machine, a fire of light wood is made in the grate under the fuel, and a fan is operated, sucking the air through the mass. Until sufficient gas is generated, the engine cannot be started, and a valve is provided to allow the escape of weak gas. When the fuel is well alight, the escape-valve is closed, the valve to the cylinder of the engine opened, and the piston moving to and fro in the cylinder draws in its charge of air and gas, owing to the movement producing a vacuum in the pipes which can only be made good by the entry of air through the producer.

Taking into consideration the quality of coal which can now be utilised as fuel in the latest types of producer plant, I do not think that it is unreasonable to suggest that excellent results may ultimately be obtained by the use of Peat fuel in such machines. The generators would require to be modified in certain respects, and it might be found necessary to work with a higher form of producer and a deeper fire than is used for bituminous coal. In Germany, lignite has been made use of in fuelling gas-producers with the most satisfactory results, the lignite being fed into the producer in the form of bricquettes. The engines supplied from these producers are used in many cases for running dynamos. As lignite is one of

the most recent geological formations, being a mineral substance holding a station intermediate between Peat and coal, and still retaining distinctly its woody texture, its successful use in gas-producing plant might be taken as an indication that the similar use of Peat would also meet with success. In France the production of power from wood scrap, through the agency of gas-producers, has been found most economical and effective in wood-working factories where gas-engines coupled to dynamos supply both power and light to the works; whilst in Mexico a copper company has for three years past been running its plant by means of producer gas made from wood, and the working of the plant has been entirely satisfactory. I think that it may be anticipated that as good, if not much better, results will ultimately be obtained from the use of Peat. And not only may it come to pass that independent power-gas installations be worked from our practically inexhaustible supply of Peat, but, as in America, where natural gas is piped for distances of over 90 miles, we may see piping laid down from gasworks on the Bog of Allen supplying gas for power and incandescent gas-lighting to Dublin. The discovery of incandescent lighting by means of ramie thread mantles heated by Bunsen burners would seem to facilitate the probable use of Peat gas, as from experiments carried out during recent years in Canada it has been shown that a gas rich in heating value can be obtained from the bog. And it is to be noted that the Peat used in these experiments contained moisture to the extent of a quarter of its volume, proving that Peat is eminently suitable for the production of a mixed gas having similar qualities to the gases evolved in producers using coal and water, thus eliminating the necessity for the introduction of water into the producer plant.

ELECTRICITY FROM PEAT.

If, then, we may expect to obtain an unlimited supply of producer gas from Peat, it follows that we shall have at hand an immense power available for the collection of that mysterious power, electricity. The limit of radius of economical transmission of electric power does not yet appear to have been fixed, and at the present time water-power plant is being erected in Central Africa to transmit current from

the Falls of Zambesi over wires for 300 miles. The power plant at Niagara generates electric energy which, I believe, is carried 200 miles, and now the Mississippi is being dammed to furnish 60,000 horse-power, and to transmit it by means of electricity to towns and factories 150 miles distant. It is not unreasonable, therefore, to suggest that electric-power stations, with dynamos, worked either by gas-engines or steam-engines (as Peat fuel has been proved on the Continent to be an excellent fuel for steam-raising) may be established on our bogs, sending out power to run the machinery of factories and to furnish heat and light to the populations of our cities. It has been estimated that each acre of bog land contains on an average 18,231 tons of Peat, and on the supposition that ten tons of ordinary bog, with all its moisture, only equals in calorific value one ton of mineral coal, each acre would produce 1,823 tons of an equivalent to coal. That indicates a heating value in the bogs of Ireland equivalent to over 5,000 million tons of coal, which has again been estimated to be capable of producing an annual output of 100,000 horse-power for 1,250 years, or, say, for about 400 years an annual output of 300,000 horse-power. As I indicated already, our coal supply is not inexhaustible, and the coal seams do not renew themselves, whereas a bog, under certain conditions, might be expected to replace the portions cut away by about 5 or 6 inches each year, owing to the reproductive power of the vegetation.

And now, in conclusion, I would only say that, should our confident hopes of utilising bogs as a source of energy meet with success, the cut-away bogs which have not been planned for reproduction of the Peat need not be allowed to become an eyesore to the traveller, as is too often the case with exhausted coal-workings, where melancholy heaps of rubbish, tottering buildings, rusty and broken machinery, and treacherous, gaping shafts are left to mar the features of many an otherwise pleasant landscape. On the contrary, the worked-out bogs might soon be converted into excellent crop-producing land, and the erstwhile desert be made literally to "blossom as the rose." To such an end arrangements might be made to send town refuse to bog-beds which had been denuded of the Peat for power production, and in the development of Chat Moss, near Manchester, where the Corporation of Manchester are

creating, out of the waste, a valuable estate of farm land and market garden, with cottages, outbuildings, light railway, and roads, we have an example which might be followed with profit. Practically one-seventh of the land of Ireland is under Peat, and, until recent years, the bog lands, instead of being considered a possible source of wealth to the community, have been anathematised as so much picturesque waste, except in so far as they kept the hearth of the cottager warm. Now people are waking up to the fact that there is an immense latent value in the bogs sufficient to supply us for centuries with power, heat, and light, which only awaits development; and I have endeavoured very imperfectly to convey to you an impression of what is being done in that direction. Instead, then, of listening on the bog to the "Bird of the wilderness, blithesome and cumberless," we may hear booming from a power-house something very like Kipling's "M'Andrew's Hymn"—

"The crank-shaft gives the double bass, the feed-pump sobs and heaves;

An' now the main eccentrics start their quarrel on the sheaves. Her time, her own appointed time, the rocking link-head bides, Till—hear that note!—the rod's return whings glimmerin' through the guides."

In obtaining material for this paper, I have to acknowledge the valuable assistance I have received from the Irish Peat Industry; Mr. Sherlock, of the Rahan Peat-Works, Tullamore; Messrs. Paté, Burke, & Co., the proprietors of Patanelle Hygienic Fabrics; Mr. Wm. Martindale; Mason's Gas-Power Co., Ltd.; and Mr. A. B. Lennox. Also that I have obtained a considerable amount of information from Professor Johnson's lecture to the Royal Dublin Society on the Irish Peat Question, and from Captain Kerr's valuable work on "Peat and its Products."

I must also acknowledge my indebtedness to our worthy Librarian, Mr. Carphin, and to our indefatigable Secretary, Mr. M'Connell, who from time to time supplied me with cuttings containing interesting information on the subject.

SAN FRANCISCO: THE EARTHQUAKE AND CONFLAGRATION OF THE 18TH APRIL 1906.

By ROBERT KIRKWOOD MACKENZIE.

*A Paper read before the Insurance and Actuarial Society of
Glasgow, 4th February 1907.*

WHAT New York is to the Eastern side of North America, San Francisco is to the West of that great continent. Like New York, she has had prosperity thrust upon her, for her situation on a peninsula at the mouth of a great natural harbour, with good shelter for shipping and deep water right up to the wharves, renders her the natural emporium for the trade of the Pacific Coast and the rapidly-increasing commerce between the United States and the Orient.

San Francisco was first settled by the Spaniards in 1776. In 1846 it was taken possession of by the United States, and in the beginning of 1849, when gold was discovered in California, had a population of 2000, which by the end of that year had increased to 20,000. The discovery of rich deposits of silver, copper, and other minerals in the West, and the development of California as a grain country and a producer of wines and fruits, the discovery of gold in Alaska, the acquisition of Hawaii and the Philippines by the United States, and the rapid increase of American trade with China, Manchuria, Japan, and the Pacific, all tended to foster the rapid growth of the city, until a year ago it had a population of over 400,000, or, including suburbs, of well over 500,000. And then the earthquake came—and the conflagration. The shock commenced at twelve minutes past five o'clock on the morning of the 18th April last, and lasted for 1 min. 5 sec. Within an hour of the main shock twelve minor shocks were noted by observers, and many minor tremors during the next few days.

Scientists agree that the cause of the earthquake was a movement along the line of a fault or fissure in the earth's surface running almost parallel with the coast line, and entering the peninsula

about nine miles south of San Francisco. The whole of Central California is an area slowly undergoing elevation, and in the process strains are formed by the bending of the rocks, which, as they gather force, seek relief by earth movements along the lines of existing faults. This particular fault, known to geologists as the San Bruno fault, probably extends deep into the earth's surface, and may have had its origin back in the Quaternary period. It has been traced out into the sea to the north and about 300 miles to the south, though it probably extends much further. By comparing the rocks and strata at the surface, it would seem that the two opposite faces have had in the course of time a differential movement of about 7000 feet, and the strata have been tilted up at angles as high as 75°. The movement or thrust which occasioned the present shock was from ten to twenty feet, and gave rise to earthquake shocks over an area extending twenty-five miles on either side. In San Francisco itself the records of the seismograph, or instrument used for recording these, show a great number of vibrations of about six-tenths of an inch, and anything over one-eighth of an inch is considered a severe earthquake. Seismologists express the conviction that this movement has removed the existing strains, and that it will be many years before these accumulate in sufficient force to cause such another upheaval, the last shock severe enough to do any damage having been as far back as 1868. It should not be forgotten, however, that in 1898 there was a severe and destructive shock at Mare Island, the United States naval station in San Francisco Bay. But the truth is that this branch of scientific knowledge is but little explored, and little understood even by the most learned. I feel sure, therefore, that you will not expect me to offer you any detailed explanation, and that you will prefer to hear something of the consequences that arose from it.

These were manifold. Many persons, though far fewer than in the exaggerated reports cabled to other parts of the world, were killed or injured by falling bricks. But for the fact that it happened at an hour when so few people were about, the loss of life would have been much greater. As it was, however, there were two serious casualties. One was the death of T. D. Sullivan, the Chief of the Fire Brigade, caused by bricks from the cornices of a neighbouring hotel crashing through the roof of his lodging at a fire engine station. The other was that, through injury to the engineer in charge, the current was not turned off the electrical

mains for about a quarter of an hour after the shock, in which time much mischief was done. It is to the fact that the current there was turned off immediately that Oakland, the rising city on the other side of the bay, owes its escape from a similar fate to San Francisco.

The damage to buildings of good construction on solid ground was not excessive, being mainly due to oscillation, and was most noticeable in those cases in which both brick and frame were employed in the construction. As might be expected from their nature, these different materials vibrate at different rates, and consequently chimneys, cornices, plaster work, copings, unbraced gables, and projecting brickwork fell. Actual collapses were mainly confined to old and flimsy frame structures upon made or filled-in ground, and to churches and other public buildings of large area and with heavy superstructures, lacking the strength and cohesion imparted by internal division walls and partitions, and often of a style of construction more pretentious than solid.

The site upon which San Francisco is built is very irregular, consisting of a series of little hills rising in tiers from the low ground round the bay, and in many places, particularly on the sites of what were formerly creeks, swamps, or hollows, the ground has been filled in. At such places there were extensive earth movements and subsidences, and consequently extensive damage to property. Where this occurred electrical power wires were displaced and contacts established, banked fires in stoves and boiler furnaces were scattered, lamps were upset, gas pipes broken, and the immediate result was the outbreak of a large number of fires almost simultaneously in different parts of the city. There is, it must be added, a strong suspicion that, in addition to all these causes, incendiarism was at work. There are records of thirty-two outbreaks which have been identified, and, as far as possible, investigated. Many of them were at once extinguished, but very soon the water supply, rated at 36,000,000 gallons per diem and capable of being worked up to 59,000,000 gallons, gave out, for, as a result of the earthquake, 1300 feet of the great 44-inch riveted wrought-iron main from the Crystal Springs reservoir, which supplied the business area south of Market Street and the lower levels of the city, were wrecked at the point where it was carried on trestles across marshy ground north of San Bruno, on the San Matteo road. The supply from the San Andreas reservoir, which serves the Mission district, was also rendered unavailable

by extensive breaks where the mains crossed low, swampy ground near Eighteenth Street, and also at Valencia Street. This left only the Lake Honda reservoir, which serves the higher residential area, and that also was crippled by damage at Vallejo Street and at a point six miles south of the city, where the 30-inch main traversed a branch of the main fault. There were, therefore, no means of fighting the series of outbreaks in the business area all along the water front south of Market Street and east of Sansome Street, and these grew in intensity till they coalesced.

The Fire Department consisted of over 600 men, with 38 steamers and seven chemical engines, and full equipment, maintained at a cost to the city of \$850,000 annually, or more than \$2 per head of the total population, and was recognised as thoroughly efficient and under able leadership. It had successfully dealt with an average of 1350 outbreaks a year without letting them get out of hand, but now it was left powerless except for the very limited supply of water in the fire cisterns, survivals of an earlier period, and what could be obtained from the 12-inch salt-water mains, the pumping house for which was wrecked by the fall of an adjoining chimney. In some cases the firemen fell back on the contents of the sewers, and in the Latin Quarter, on Telegraph Hill, 300 houses were saved by using red wine as a fire-extinguishing agent. This was one of the few districts located in the burned area to escape the flames, and barrels upon barrels of wine were used to stay the fire when the water gave out.

About ten o'clock on the forenoon of the day of the earthquake another fire broke out in Hayes Street, in the immediate vicinity of one following upon the earthquake which had been extinguished. This was caused by a woman lighting a fire for cooking purposes in a stove with a wrecked chimney, and is usually referred to as the "ham and eggs fire." In the absence of water it got beyond control and started a second conflagration, which burnt on through the residential area and back to join the fire moving along the line of Market Street. By this time the military had taken control of the city, and at night a third blaze started in the Alcazar Theatre, and this also developed into a fresh conflagration, and the three swept on independently. Towards night a strong south-easterly wind sprang up, and, intensified by the blast a conflagration itself causes, drove the flames onward throughout the night and the next day, leaving the exhausted firemen, who strove heroically, powerless to do anything

except endeavour to save life. On the Thursday a fourth fire broke out at Leroy Place, and ran its course with the others, and so it continued till Friday, the 21st April, when, in the afternoon, the wind turned, and, repairs having been effected on the Lake Honda mains, water was available on the splendid 120-feet broad Van Ness Avenue, which the fire had reached. By this means, combined with the free use of dynamite and back firing, which could now be supplemented by streams from the hose, the conflagration was checked, the important residential district known as the Western Addition was saved, and the conflagration was at an end. No words can give any adequate idea of the appalling scene of ruin and desolation. For mile after mile it was merely a vista of tottering brick walls and twisted steel, shrouded in darkness by night and in dust by day. The sight must continue to haunt the minds of all who have seen it.

Previously the fire loss record of San Francisco had been most consistently satisfactory, the experience over a term of 22 years, from 1881 to 1902—the latest figures I have been able to obtain—showing a loss ratio of 28·7 per cent., the losses aggregating \$13,477,223, against a total premium income of \$46,956,519. The business was therefore most keenly sought after, with the result that general practice was very lax. Brokers and agents could practically dictate their own terms of remuneration and the forms and wordings of their policies, and complaints regarding tariff observance, or, rather, the lack of it, were rife. Many companies had entered the United States through that field, and others who did no business in other parts of America, or had retired from the remainder of that field, operated freely in San Francisco.

Rates were good, though they were being steadily reduced by competition, and the timber used for building purposes, Redwood (*Sequoia Sempervirens*), was of a peculiarly porous nature, absorbing moisture from the sea fogs which are common at night. "Redwood won't burn," was a phrase on the lips of every insurance expert in San Francisco. After all, there is something to be said for it, for, as a matter of fact, the record showed that fires in redwood buildings had been almost as successfully held in check as those in erections of brick, and redwood houses with blistered paint line the streets where the fire was checked. But one of the great lessons of this fire is that anything will burn in a conflagration of this magnitude, and if pine instead of redwood had

been used in the construction of the residential area no part of the city could have been saved.

Mere figures hardly convey to the mind any adequate idea of the extent of the damage done. I may mention, however, that the area destroyed extended to 3000 acres, or about $4\frac{1}{10}$ ths square miles, comprising 520 city blocks, containing about 25,000 different buildings, and at least four-fifths of the property value of the city.

It is somewhat difficult to arrive at an exact estimate of the actual property loss, but averaging up the various methods by which it is possible to work towards an estimate, namely, through the assessed value of property for taxation purposes and through the claims upon offices in the light of the very general under-insurance, I am inclined to put it at not less than \$350,000,000, which is the same figure arrived at in Professor Whitney's report, though other competent opinions place it as high as \$450,000,000, and to estimate the liability of insurance offices and underwriters at from \$235,000,000 to \$265,000,000. What this has meant to the business of fire insurance is best expressed by saying that this amount closely approximates to the total of the surplus fund of all the offices—American and Foreign—as reported to the New York Insurance Department, in which connection it must, of course, be borne in mind that Foreign offices report only their American investments, and that the standard of provision for unearned liability fixed by law there is very stringent, being 50 per cent. of one year's income in respect of annual policies, and the full *pro rata* in respect of long-term policies. Another way of looking at it is that the loss substantially exceeds the entire underwriting profit on United States fire insurance business for the thirty-five years to 31st December 1905, namely, \$165,653,332 on a total income of \$3,547,726,041.

It is interesting to compare these figures with those of other historic conflagrations, as for instance:—

	Date.	Area Destroyed.	Damage.
The Great Fire of London (the event, by the way, which led to the foundation of the business of Fire Insurance)	1666	436 acres.	Say £11,000,000
Tooley Street, London	1861	3 ..	1,000,000
Chicago	1871	2,500 ..	33,500,000
Chicago	1874	60 ..	1,000,000

	Date.	Area Destroyed.	Damage.
Boston	1872	80 acres.	£14,000,000
St. John, N.B. .. .	1877	350 "	3,000,000
Spokane and Seattle .. .	1899	—	2,500,000
St. John's, N.F. .. .	1892	150 "	3,000,000
Cripple Gate .. .	1897	4 "	1,000,000
Flinders Lane, Melbourne .. .	1897	5 "	1,000,000
Hull and Ottawa .. .	1900	800 "	1,500,000
Entrepot Royal, Antwerp .. .	1901	6 "	600,000
Jacksonville, Florida .. .	1901	650 "	2,000,000
Baltimore .. .	1904	140 "	10,000,000
Toronto .. .	1904	20 "	2,600,000

The San Francisco conflagration stands out from any other, not only by reason of its magnitude, but also in respect of the complexity of the problems involved. It would have been in itself a giant task to arrive at a fairly correct estimate of the various losses, and to satisfy the assured that this had been done (even if it were not complicated by the question of earthquake damage), in the face of the complete destruction not only of the property itself, but also, in the great majority of cases, of all records relating thereto. This is a more serious matter in America than in this country, for there the assured's sworn statement of loss becomes in itself *prima facie* proof of loss unless exception is immediately taken to it by the office, and, further, it is necessary to make all objections to this proof of loss at one and the same time.

Other complications arose with regard to liability for damage caused by dynamiting and by looting, and also in respect of property commandeered by the troops and by the authorities during the time the city was under martial law. If these were not enough, there were the further complications arising from the variety of clauses in use, particularly with regard to liability for earthquake damage, and, above all, the lack of confidence on the part of the offices in the administration of the Courts of the State of California, the judges of which are, in accordance with the usual practice in the United States, elected by popular vote like the other officials. But perhaps none of these causes did more to complicate the situation than the lack of solidarity amongst the offices themselves.

It is perhaps better to refrain from enlarging upon any of these points, each interesting in itself and having many ramifications, and to give a brief outline of what actually occurred during the

months the losses were under process of settlement. The first incident was the passage in hot haste and at the instigation of the Insurance Commissioner of special legislation, under which the offices were compelled either to extend by an additional sixty days the period of sixty days allowed by the policy conditions for the filing of claims, or alternatively to file with him within ten days full copies of all policies and policy clauses, and endorsements thereon covering risks in the city and county of San Francisco, under penalty of having their licences to do business in California revoked. The bulk of the offices accordingly did extend the time for filing "proofs of loss," or their representatives did it for them, though some few preferred to suspend adjustments and turn all forces on to making copies of their policy and endorsement books. This was shortly afterwards followed by a lengthy telegram from the Governor of the State and the Mayor of the city sent direct to the head offices of all companies. It is sufficient to quote the concluding words, namely :—

"We appeal in our misfortune to your manhood, business integrity, and sense of justice to interpose your veto on the disreputable tactics of certain agents, who are irritating our people to the point of exasperation."

Enquiries as to whether and to what extent property had fallen or been damaged as a result of the earthquake and previous to its destruction by fire, as to whether it had been dynamited by the military in their attempts to check the spread of the conflagration, or to whether goods had been looted or commandeered, as to values and quantities, as to whether any of them had been saved in the interval between the earthquake and the time the fire reached them, as to ownership or insurable interest, demands for invoices or other proofs of value, all came under the heading of "disreputable tactics irritating the people to the point of exasperation." One prominent citizen, the owner of two paintings, one of which was burned in the Mark Hopkins Institute, while the other was damaged by being removed from the frame, was so incensed because the adjuster asked him where he had purchased the paintings, and what he had paid for them, that he rushed off and wrote an open letter to the Attorney-General, saying in part— "This company wants me to state when and where I purchased the paintings, and what I paid for them. Of course, I refused to comply with this absurd request."

The movement thus inaugurated developed into a fierce struggle

to force valued policy conditions into the contracts of offices generally, and to compel them to accept their policies as practically sight drafts upon them. I would not care to say outright that any offices were actually found who allowed themselves to accept this view of the situation, but I do feel justified in saying this—that the bulk of the settlements were necessarily more or less based upon guesswork, and that some offices did allow their assured to do most of the guessing. The offices whose representatives showed any disposition to take a hand in the game and do a little guessing on their own account were apt to find things become interesting. I suppose this must be considered as a normal condition where evidence is necessarily defective, but what differentiates the San Francisco adjustments from others is that, while, as a rule, adjusters have to deal with isolated individuals, in this instance they had unfortunately to deal with a community—and a large and particularly vigorous community, too—who had enormous amounts at stake, and who had been lashed into something like frenzy by their own Press and political leaders.

Perhaps in no particular was the unscrupulousness of the campaign against the offices more openly manifested than in the manner in which representatives of offices were dragged before the Grand Jury, inspired by one of its members, himself an adjuster for the assured, or "claim-maker." There they found themselves subjected to the most inquisitorial catechism regarding their actions and those of their offices, often in respect to matters with which the Grand Jury had no concern or interest, and in face of the best legal opinion that their questions were irrelevant.

The situation briefly was that most people had lost their all, and that they were "out to get their insurance money." Neither legal contracts nor equities appeal much to people so placed. Every man whose claim was cut down for any cause raised a clamour that he had been robbed. Too often the agents with whom he had placed the business sided with him, thinking rather of future business than the interests of their offices. The Coast managers never seemed to be able to stop harping on the profitable results of their business in the past, forgetting that the profits they had made in twenty-five years were about sufficient to pay a year's interest on the amount of the loss that had to be faced by the offices. Then several Continental offices with large interests repudiated liability altogether, quite irrespective of the terms of their policy conditions, and a number of smaller native offices

declared themselves unable to meet their liabilities in full. The result was that everybody who had filed his claim called all offices "robbers" and "welchers" if any questions were raised. Equally, adjusters who had to deal with unsatisfactory and extravagantly inflated claims were rendered more than usually suspicious of all claimants. One adjuster put his position very neatly when he said, "We are a dollar-for-dollar company if and when the claimant has a dollar-for-dollar claim." Delays were necessarily long, and the mental strain on all concerned very great. I must say, however, that with very few exceptions, though the fights were fierce while they lasted, the San Franciscans were good sportsmen, and accepted the results in good part. They bore the unavoidable and tedious delays in dealing with such an immense number of adjustments with but little complaint. They fought like wild cats for "the policy, the whole policy, and nothing but the policy," quite irrespective of any and every other consideration. As it was wittily put, "The settlers of 1849 may be revered, but the settlers of 1906 will never be forgotten." Still, as a rule, a week after settlement one found them warm friends, pretty much irrespective of what the basis of settlement had been. Some of us will always preserve a kindly recollection of men who had warm tempers and warm hearts, who were generous to a fault, and who had a marvellous command of language—who were good opponents and good friends.

A long sequence of favourable results had obtained for managers of Pacific departments perhaps greater freedom and independence of action than any other body of branch managers, and those differences that will manifest themselves in any centre culminated in this instance in acute discord. After communication with the British offices, a meeting of the American companies was held at New York on the 31st May, at which many managers of United States branches of British offices were present as representing their American subsidiary companies, and a basis of common action was then laid down in the following terms, namely:—

"Whereas, on the 18th of April 1906, a great earthquake occurred in the city of San Francisco, California, which destroyed property to the value of millions of dollars, and was followed by a conflagration made unprecedented in extent and damage by conditions induced by and following said earthquake;

Whereas the problems arising in connection with the settle-

ment of such losses are complex and intricate to an extent never before equalled in the history of underwriting by reason of the following and other factors, namely :—

- (a) The difficulty of clearing segregating losses for which companies are liable from those from which they are exempt ;
- (b) The existence of many varying forms of policy contract ;
- (c) The loss of essential records, both by insurance companies and by the assured ;

Whereas it is highly desirable that all losses for which insurance companies are legally liable should be promptly settled with equity and fairness to all concerned ; and

Whereas it is expedient that a statement as to the legal and moral liability of companies in regard to claims arising from the catastrophe at San Francisco should be made, the subjoined is adopted as a fair statement of such liability, suitable to be used as the basis for adjusting losses :—

First.—Where policies covered buildings and (or) their contents which had certainly fallen before the fire, or which had been so damaged as to void the insurance under the express terms of the contract, claims under such policies should not be paid.

Second.—Where policies covered buildings and (or) their contents which may have been damaged or destroyed by the authorities, civil and (or) military, subsequent to the conflagration, claims under such policies should not be paid until the facts have been definitely ascertained.

Third.—(a) Where policies covered buildings and (or) their contents which were probably, but not certainly, so damaged by earthquake as to be brought under the provisions of the fallen building clause ; or

(b) Where policies covered buildings and (or) their contents which had suffered from shock of earthquake, but not to such an extent as to bring them within the provisions of the fallen building clause ; or

(c) Where policies covered buildings and (or) their contents which had been damaged or destroyed by the authorities, civil and (or) military, before fire had reached them ; or

(d) Where policies covered property whose owners, by reason of the destruction of their books and records, are unable to

supply the proofs of value required by the conditions of their insurance policies, in all such cases claims should be settled by a reasonable compromise.

Fourth.—Where policies covered contents of buildings which are certainly not affected by the exemption conditions of the policy, claims under such policies should be paid as soon as adjusted, subject to such deduction, if any, as may fairly be made on account of the salvage resulting from the removal of portable property from building before fire had reached them.

Resolved.—That all the insurance companies interested in this disaster, both domestic and foreign, be, and they hereby are, cordially invited to unite in the carrying out of this plan of operations."

These resolutions were cabled to London and to the San Francisco representatives, and were considered by the latter at a meeting held on 7th June. Here again these differences of opinion already referred to reasserted themselves, the majority holding that, as all property was more or less affected by the earthquake, in equity all claims should be settled on the basis of, say, 75 per cent. of the face value of the policies—in other words, that what is called a "horizontal cut" should be made; whilst the minority held that compromise should take the form of a deduction from the sound value as assessed, and that policies should be paid in full up to the amount thus brought out. In view of the universal under-insurance which prevailed in San Francisco, cover averaging perhaps 60 per cent. of value, and in the absence in the great majority of cases of any co-insurance clause, this latter view practically meant paying policies in full. The meeting divided as follows, viz., 61 for and 32 against, 18 offices not voting and 9 being absent. It was a strictly private and tentative meeting, but the results, with full particulars of the voting, appeared in all the local newspapers next morning, which in itself tended to widen the breach, though the incident is quite characteristic of Californian insurance manners. The minority formed themselves into a separate committee within the General Adjustment Bureau which had been established by the companies, and were henceforth known as the "dollar-for-dollar" class, while the majority were, unjustly in many instances, labelled the "six-bit" class, that being the Californian equivalent for "three-quarter" class. From that time each office was practically a law unto itself, until very shortly there were as a matter of fact just about as many classes as there

were offices. The public did not fail to take full advantage of the resulting lack of unity and solidarity.

Reference has been made to the absence of co-insurance or average conditions, but one sometimes wonders what the effect upon the offices would have been had anything of the sort been imposed and something like full insurance been secured. As it is, the feature of this conflagration is the manner in which the loss as a whole has been met by the companies. The 18 British offices have had to face losses of about £15,000,000 gross, or £11,000,000 net, and not one has defaulted. Of the 90 American offices only 15 have defaulted, and of 15 Continental offices 4 have defaulted, but, unfortunately, all these latter had very large liabilities, and their action had a material effect in aggravating the general situation. Allowing for all salvage obtained on settlements, and in spite of all the complications and difficulties due to the conflagration being the result of an earthquake, about 80 per cent. of the full insurance in force has been or will be paid. Many of the leading American offices faced their liabilities just as liberally as the British offices, in spite of the fact that a number of them had to make heavy additions to their capital account, estimated at \$35,000,000 in the aggregate, an experience which one of our own offices had also to face. Three of the British offices were protected by earthquake clauses, and, while repudiating liability, made *ex gratia* or compromise settlements at 50 and 75 per cent., but several of the stronger American offices having earthquake clauses waived them, and settled on practically the same lines as their competitors who were less favourably situated. They took long views, and in all probability will have their reward.

The circular letter issued on the 30th April by twenty of the leading Continental reinsurers to their treaty allies, both in Europe and America, is worthy of attention. In this document they recapitulate various statements of the legal view taken of earthquake damage by Continental authorities. Their position may be summed up in their own words as follows:—

“Legally the question is not at all whether loss by earthquake is excluded by the conditions of the policy or not, but rather whether the undertaking of liability for such loss is expressly agreed to in the policy or not. If the contract does not include such an agreement, their payment cannot legally be demanded of the insurer for loss caused directly or indirectly by earthquake.”

This position some of these reinsurers pressed strongly for a time, at least, and some offices found themselves face to face with the position of having to finance some part of their reinsurers' liability as well as their own. Weak local reinsurers were also a cause of much difficulty, and as a result, on the Pacific Coast at least, reinsurance has now been reduced to a minimum, leading, of course, to a much wider distribution of the business.

A very curious point which came up in the later stages of the settlements was the claim made by various American offices who had compromised with their creditors or were proposing to do so that the reinsurance contract is one of indemnity against liability, and not against damage, and that they are consequently entitled to recover the reinsured proportion of the loss as adjusted, quite irrespective of how or when they discharged the claims upon themselves. Good American lawyers support them in this view, but the question will no doubt be disposed of by the courts. The point seems new, and quite contrary to all practice, and if the view is sustained would lead to reconstruction of the system of reinsurance. The clause in general use on the Coast seems clearly enough to the contrary effect, but still the lawyers seem to think they can get round it. It reads as follows:—

“This policy is subject to the same risks, valuations, conditions, and adjustments as are or may be taken by the reinsured, and loss, if any, thereunder is payable *pro rata* with the reinsured, and at the same time and place.”

There is no use disguising the fact that the offices have to operate in the various States of the Union under the particular laws of each State as interpreted by a popularly-elected judiciary, and, in view of the state of public feeling, the best legal advice obtainable was to the effect that recourse to the State courts was useless, or, as it was put, “At the moment there is no such thing as justice for an insurance company in California.” This unfortunate position results from a decision of the Supreme Court of the United States that insurance is not commerce, and is therefore not under federal supervision. This has made it possible for California and many other States to pass laws which require the Insurance Commissioner to oust from the State any company that makes a transfer of a case against it from the State courts to the Federal or United States courts.

In one position they took up the Continental reinsurers were

undoubtedly in the right, and that was when they said, with regard to the earthquake clause—

“That in future, in all policies in all fields in which it is lacking, a clause should be immediately inserted which shall exclude in the clearest and most definite manner liability for all losses arising, directly or indirectly, as a result of earthquake and other natural phenomena which are outside the range of calculation.”

A committee of the Board of Fire Underwriters of the Pacific is at present considering the subject of such a clause, and the best form to adopt, and the latest expert scientific information to hand bearing on the liability to severe seismic disturbances and upheavals of the greater portion of the State of California most strongly emphasises the necessity of action being taken by the offices. It is a curious fact that some time before the earthquake, I think about a year or so, the Pacific Board of Underwriters actually did insist on their sub-agents in Honolulu inserting an earthquake clause in policies there. But that is one matter, and admitting even now any special liability to earthquakes or any other evil in their beloved California is another and very different matter, not to be thought of for one moment. It is, however, most likely that at an early date California will legislate on the subject and impose a standard form of policy, though serious warnings have been given regarding the advisableness of ceasing to harass the offices in this way. The lesson given by San Francisco has since been emphasised by Valparaiso—or, rather, Chile—and more recently still by Kingston, Jamaica. There, however, the offices use a much better clause than any in use in California, for, in addition to excluding “loss or damage by fire during or in consequence of an earthquake,” it adds, “unless it be proved by the assured that the loss or damage was not occasioned thereby.”

The granting of protection against the consequences of earthquakes and other convulsions of nature beyond the range of calculation may be a proper subject for insurance, but does not properly come within the scope of legitimate fire insurance business, and the current premiums charged for fire insurance are not sufficient to allow of the inclusion of the risk in the fire policy, particularly in areas of seismic activity. National disasters should be met by national remedies and national resources. A similar catastrophe in London or New York would

probably ruin the strongest offices doing business in these cities, and thus leave the trading community generally without protection.

In San Francisco the assured traded largely on the alleged act that there was no evidence to prove that the fire which destroyed a particular property was actually a result of the earthquake, and the courts showed every disposition to support them in this view. The importance, therefore, of definitely placing the burden of proof on the assured can hardly be over-estimated.

Press reports just to hand from San Francisco state that, on the 15th January, in the suit of T. I. Bergin against an English office having the earthquake clause, Judge Whitson, of the United States Circuit Court, sustained an objection against testimony showing that the destruction of property was due to the crippling of the water mains by the earthquake. He said:—

“I cannot divest myself of the belief that the words ‘direct or indirect loss or damage’ were intended to relate to the direct or indirect origin of fire, and not to the disarrangement of the agencies employed to prevent the spread of fire.”

If this view should be upheld on appeal, it may have an important bearing on questions of the liability of offices with earthquake clauses in respect of property destroyed by those fires already referred to which broke out on the days following the earthquakes and destroyed a considerable portion of the city.

It was, however, rendered abundantly evident during the adjustments that the office that had even a weak earthquake clause was in a much more favourable position in dealing with claimants than the office that had none, even supposing it did not choose to stand on its strict rights.

The whole question of a suitable and effective wording for an earthquake clause which will give adequate protection to the offices and be fair to their customers is being enquired into, and the sub-committee who have the matter under consideration and their counsel have no easy task. Their report and recommendations may have far-reaching effects.

There was one direction, however, in which satisfactory work was done, and that was in connection with the adjustment losses in which six or more offices were interested. These were dealt with by a committee of the General Adjustment Bureau established and maintained by the offices as a body. One most useful piece of work they did was to compile and circulate an abstract

of all information that could be obtained from the fire patrol reports and otherwise with regard to the condition of each block after the earthquake and before the fire, which was usually known as the "Ferry report." The information was necessarily very vague in most cases, and the very men who had supplied it for patrol report purposes were quite ready to come forward later on as witnesses for the assured to prove that there was no damage whatever. Still, it gave adjusters something to work upon, something to start from. In the case of these insurances upon risks where a number of companies were interested the adjustments were dealt with by committees of three members, two of whom, as a rule, represented the offices carrying large lines, and one the offices carrying small lines. In the case of the minority or "dollar-for-dollar" group the reports of these sub-committees were submitted to and passed upon by a permanent "Committee of Five," the members of which naturally gained great prestige for themselves and the offices they represented.

These committees dealt with 1337 such claims, the results reported being:—

Sound Values of Property	\$119,390,343.45
Salvage	12,185,260.88
Adjusted Loss	107,214,982.37
Insurance	82,842,600.80
Insurance Loss	76,125,958.99

In the large risks dealt with by these committees there were a few cases where the local managers had found courage to insert some form of coinsurance clause in their policies. Earthquake damage, even when possible of proof, but seldom brought sound value down to or below the amount insured. Where, as a rule, savings were effected was by the application of the "Fall Clause," which appears in the various American standard forms of policy and reads as follows:—

"If a building or any part thereof fall, except as a result of fire, all insurance by this policy on such building or its contents shall immediately cease."

This clause grew out of fraudulent claims by owners of buildings which had collapsed, or partly collapsed, and took fire because of the fall. The courts have always placed the broadest construction upon the clause, and held it to mean that either an integral, material, and substantial part or sufficient to destroy the semblance of the building must have fallen to render it operative. Still, it was very largely by means of this condition

that any salvage at all was possible. Damage was hard to prove. The inhabitants of the burnt city were scattered to the four winds, and to find the neighbours or other eye-witnesses was a matter of great difficulty, and, even if found, the adjuster was not much further forward. Indeed, as a rule, he had only secured further evidence for the assured, for the offices were regarded as the common enemy, against whom all things were lawful. The main industry and business of the city for months was the production of affidavits, and any claimant could walk into the first taproom and secure as many affidavits as he might wish regarding anything whatever, so long as these were to be used against the offices. Notaries reaped a rare harvest, and habitually referred to their places of business in ordinary conversation as their "affidavit factories."

Some saving was usually effected through the fact that the standard policy provides that—

"The loss shall not become payable until sixty days after the notice, ascertainment, estimate, and satisfactory proof of the loss have been received by the company, including an award by appraisers when appraisal has been required."

Consequently when payment, which was not due for sixty days, was desired in cash it was usual to require a discount, and rates varying from 1 and 2 per cent. up to 5 per cent. were obtained, and formed a material contribution to the total salvage. Some allowance for cash was regarded in the circumstances as perfectly legitimate by the claimants. Three American and two British offices are reported as having declined to accept any discount for prepayment, thereby making their assured a present of sixty days' use of their money, which was certainly very generous, whether they were actuated by motives of philanthropy or foresight. Either way they will have their reward.

In marked contrast to the bitter and unscrupulous criticism and abuse lavished upon the offices during the period the adjustments were proceeding is the restrained, judicial, carefully-worded, and carefully-weighted report upon the settlements in connection with this conflagration prepared for the San Francisco Chamber of Commerce by Professor A. W. Whitney, of the State University of California. It is what might be expected from a cultured and fair-minded gentleman of high scientific attainments, and to a great extent makes amends to the offices for what they have had to endure during the weary months from May to October last.

It is remarkable, not only for its fair and just treatment of the offices, but for the frank and sound advice it conveys to his fellow-citizens, by which it is to be hoped they will be influenced. It is pleasing to see the good points of character which one observed in individuals manifesting themselves in the community collectively, for that is what the adoption of this report by the Chamber of Commerce means.

The whole circumstances surrounding the adjustment and settlement of the losses were abnormal. The loss was abnormal, the conditions were abnormal, the settlements were abnormal. There were earthquake damages and the destruction of evidences by fire; loss of books and consequently memorised schedules of loss; stocks seized by the city authorities and confiscated (the claims for which number thousands); goods given away, goods removed, goods stolen; dynamiting to stop the fire and after the fire; fraudulent proofs of loss; cancelled policies on which claims were being made; complications between offices where records were destroyed; the position of weak local and difficult treaty reinsurers; the attitude of the authorities, courts, and Press, who were banded together into one huge collecting agency; the complicated legal points involved, and the absence of precedents to afford guidance. In the circumstances, the handling of the San Francisco loss claims can hardly be called adjustments or assessments. They were settlements, but not adjustments. They did not add much to one's knowledge of or insight into the technique of adjusting, but they did afford a rare school for acquiring more or less of a certain rough-and-ready type of diplomacy and knowledge of men, and for learning to deal with difficult and complicated problems on the spur of the moment. No address of this nature is ever complete without some moral being drawn for the benefit of the younger brethren, and I would therefore venture to offer them this as the moral I would draw for them, viz., that there are many things to be got by asking for them nicely, including salvages on occasion, or, to quote a latter-day Californian philosopher of my acquaintance, "Put honey on thy tongue, for the jolly is mightier than the hammer."

I have often wondered, as I suppose others of us have done, what manner of men they were who handled the American affairs of the offices. One gets acquainted in a way with many of them on an official mission, but it is when one has to get down alongside of them and "saw wood," to use one of their own phrases, that

one really gets to know them. I must say I found the American special agents and adjusters about the brightest, most capable, and most original set of insurance men it has ever been my fortune to meet, and it was a pleasure to work with them.

We come now to one of the most interesting points to be considered, namely, how the system of joint stock fire insurance has stood the test imposed on it, and how the offices came out of the most severe ordeal in their history. The statistics of many are not yet available through the annual statements to the various departments, and it is not possible to consolidate them. When these can be fully compiled, the results should be most interesting. For the present, Professor Whitney's conclusions, derived from careful study of the actual settlements of over 10,000 different insurances, supplemented by reports from the offices themselves, may be adopted with advantage. He says:—

“Unquestionably, taken all in all, the companies have done remarkably well. An immense sum of money has been paid into this city, a far larger sum than companies have ever been called upon to pay at one time before. In spite of the earthquake, in spite of the nearness in time of the Baltimore and Toronto conflagrations, the companies will finally have paid undoubtedly in the neighbourhood of 80 per cent. of the amount of insurance involved. At Chicago there was 50 per cent. paid; at Baltimore 90 per cent. The remarkable difference between the showing made by the companies at San Francisco and at Chicago, where there were forty-six that failed, shows the great progress that has been made in thirty-five years in legitimate underwriting.”

This testimony is all the more valuable as given by a gentleman who had opportunity of becoming acquainted with the details of so many settlements, and who, moreover, was appointed by a body hostile to the offices, which body yet saw fit to adopt his conclusions.

His verdict regarding the action of individual offices is also interesting, and, speaking generally, it is in accordance with what I was able to gather or observe while engaged in the work there. His results may be classified as follows, omitting offices known to be subsidiaries of other companies, and bearing in mind always that under the standard form of policy in use in the United States losses only become payable sixty days after adjustment, the usual practice being to discount the amount payable when prepayment is required, regarding which he adds:—

"A few of the companies paid their claims with no discount for cash. Most of the companies, however, took a cash discount of 1 per cent., or usually 2 per cent., and sometimes more, if called upon to pay before the end of sixty days. Two per cent. was generally recognised to be, under the circumstances, entirely reasonable, and companies paying at this rate were held in practically as high esteem as those that paid in full at once. As a matter of fact, to pay a claim two months before it was due was worth all of 2 per cent., first, because of the difficulty of realising quickly on securities, but, secondly, quite as much because it often happened that during the sixty days additional evidence was obtained on the claim. . . . Payments were not due till sixty days after adjustment; payments 'in full' or 'in full with cash discount' mean immediate payments, it being understood that in these cases the claims would have been paid in full on maturity."

Personally, I might go further than Professor Whitney has done, and add that I have frequently heard prepayment without discount characterised by the recipients themselves as unbusiness-like, and an action they did not understand. And San Francisco claimants are exacting enough in all conscience, for it was quite a common experience when making payment of a claim to receive a further demand, energetically pressed, for refund of the return premium from the date of the fire to the expiry of the policy. Whether any offices extended their generosity to admitting claims of this nature I do not know.

Classification.	British.	Colonial.	American.	Of these waived Earth- quake Clause.	Continental
100 per cent. cash	2	—	3	—	—
In full less 1 per cent. . .	1	—	2	1*	—
In full less 2 per cent. . .	8	1	13	3*	—
In full (or mostly in full)					
less 2 to 5 per cent. . .	1	—	7	—	—
90 per cent. and upwards	1	—	7	—	—
75 " "	2	—	20	3*	4
50 to 75 per cent.	3*	—	1	—	—
50 per cent.	—	—	2	—	—
40 per cent.	—	—	2	—	—
30 per cent.	—	—	1	—	—
Small dividend.	—	—	1	—	—
Paid by instalments. . . .	—	2	1	—	—
In hands of Receiver. . .	—	—	4	—	—
Paid nothing.	—	—	1	—	4 1*

* Had Earthquake Clause in policies.

The whole system of joint stock fire insurance has been put to a searching test, and it must be admitted to have justified itself. The advocates of municipal insurance may well reflect what would have been the position of the city of San Francisco, or even of the large and important State of California, if their people had to shoulder this loss. The authorities of that State, at least, appear to realise it, and the following observations addressed by Governor Pardee to a crank of this particular type are worth placing on record.

“ No doubt there are a good many persons who think that insurance business might very well be carried on by the State, but you will probably admit that, after all, it is a very risky business, and that it is fortunate the State was not the insurer of property in San Francisco at the time of the great fire. Just consider for a moment what the situation would be now if all the destroyed buildings had to be covered by insurance issued by the State. The loss is estimated at \$500,000,000 or more, and the amount of insurance carried was somewhere between \$200,000,000 and \$250,000,000. Now, the assessed valuation of all improvements in the State has usually been about \$550,000,000. Assuming that \$350,000,000 of this amount represented improvements destroyed in San Francisco, that would leave \$200,000,000 of insurance on property destroyed in San Francisco, and the owners of improvements in other counties, if called upon to foot the bill, would have been compelled to pay an amount equal to the total assessed valuation of their property. Of course, this would have meant practical bankruptcy for the whole State. The fundamental principle of insurance is distributing the risk, and no government, whether city, county, or State, could afford to become the insurer of all the property within its boundaries.”

It may be said that San Francisco and also Valparaiso, situated as they are at the foot of the great range of mountains comprising the Rockies and the Andes, the obvious creation of a giant fold or fault in the surface of the earth, are particularly exposed to such contingencies as led to this conflagration, but it is equally true that our own islands form part of such another line of fault, namely, that leading from Iceland, through the Farøe, the Shetlands, Fair Isle, the Orkneys, the Highlands, and the mountains of Wales, down to Cornwall. The line from the Alps, through

Italy into Sicily, is another example. These two great faults have safety valves in the volcanoes of Hecla in Iceland, and Vesuvius and *Ætna* in Italy and Sicily, but the great lesson of this conflagration, as I read it, is that anything may happen.

The necessity, in the interest of the trading community and of everyone possessing property, of large amounts of capital being sunk in the business of giving indemnity against destruction by fire must be more obvious than ever, and the policy of the offices in building up adequate reserves has also received the fullest justification. Already merchants all over the United States are finding their banking facilities materially curtailed on account of the difficulty of obtaining full insurance cover in the business and congested areas of the great cities. As a result there is a distinct change in their attitude towards the offices, for it is being brought home to them forcibly that the stability and prosperity of the insurance companies are in the last resort as much matters of importance to the community in general as they are to the shareholders themselves. They are learning that the offices are just as necessary to the community as the community is to the offices, and that to get good insurance one must pay a good price, just as in the case of any other necessary commodity. The increase in rates being imposed at this time is 25 per cent. on the Pacific Coast, and 25 per cent. in congested business areas elsewhere in the United States. Unfortunately these increases are not being maintained. The Press and public bodies like Chambers of Commerce in other cities were at first inclined to join hands with San Francisco in the endeavour to coerce the offices, but found other matters to take up their attention when the more sober minds among them suggested that the first question for their consideration was whether, when the settlements there were completed, they would be able to find sufficient reliable insurance protection for themselves. The history of the great offices of to-day dates from the Chicago conflagration of 1871, and the opportunity is again in the hands of the offices who have shown they are made of the right metal to carve out their own futures.

Professor Whitney's report will be the real "Who's Who" in fire insurance business for many a long day—the real touchstone to test an office. My own feeling is that hereafter there will be only two dates in insurance history, namely, "before San Francisco" and "after San Francisco," and I am inclined to think that the event will have much to do with the making of the

insurance history of the next quarter of a century, which is all that will directly interest many of us.

Depleted reserves must be built up again in the public interest, and ample provision made for the disasters which must from time to time recur in some part of the world, and adequate rates are more necessary than ever. It is not in the public interest to weaken the offices, nor to see their ranks unduly depleted. I do not think it would be a good thing for the country to see insurance business centred in the hands of a few offices, relying for trading profit or working expenses on commissions from Continental reinsurers. "Live and let live" is likely to be just as good a motto for offices as for men in the long run. Already far too much good British fire premium, which ought to be yielding a return on good British capital and finding employment for Britishers, is being handed over in great blocks to the Continental offices, to the detriment of those interested in British insurance business.

It is, however, the time for the offices to bring excessive commission and brokerage terms, particularly in America, within reasonable limits, and so to reduce the cost of the business, and to put unprofitable sections and classes and business in areas subject to the risk of conflagration on a better basis, and the movement in this direction makes progress. By the general adoption of scientific methods and schedules of rating, much can be done to improve the style of construction of new erections. If this experience does not lead to the offices generally setting their houses in order, it is difficult to conceive what will, and the insuring public of the world now know what offices can be depended upon in foul weather as well as fair. Once and for all, the sheep have been divided from the goats.

The questions raised by this disaster cannot be disposed of simply by reference to America. What happened in San Francisco and Chicago may happen in the city of London—nowhere more likely—not to speak of places with which some of us may be more familiar. I have a lively recollection of arriving in London on the evening of the Cripplegate fire, in 1897, when a change in the direction and force of the wind at a critical moment might, in my opinion, have left the British offices with their hands pretty full.

"Human life is chancey at any kind of trade," and it is well that we should remember that of none is that more true than it is of our own. There should be a substantial margin of profit in fire

insurance premiums to compensate the investor for the great hazards that unquestionably are latent in the business, however smoothly it may appear to run at times, and even over lengthy periods.

It requires a long term of years to arrive at a correct estimate of the real results of insurance trading. The main function for which the offices exist is to distribute the losses which occur to individuals over the community, but to do this successfully they must also, to some extent, act as bankers in accumulating in periods of immunity for the disasters which will inevitably recur. Of course, the extraordinary cumulation of circumstances which led to this catastrophe are not likely to recur again, or for a very long time at least, if there is anything in the law of average. If they were to do so, and the offices were to accept liability for such events, the best thing they could do would be to discontinue the business and employ their capital in other directions. Still, as simple a cause as the kicking over of a lamp by a cow caused the Chicago conflagration.

No system of underwriting can eliminate the conflagration hazard. The business is not yet fully organised for great conflagrations. Since it became an organised system—that is, say, roughly a hundred years—there have been but two great destructive fires beyond reasonable calculation. Chicago and San Francisco are the only conflagrations to exceed a square mile in area, and it has taken a century to produce them. There is no practical system of distribution yet devised that will protect offices against the sweeping effects of conflagrations of that magnitude.

In San Francisco an average liability of £400 on blocks measuring, say, 300 to 500 feet each way, and containing on an average, say, 50 buildings, would have given an office a liability of £208,000 in the burnt area; or, to put it another way, an average interest of £10 a building would give a liability of a quarter of a million sterling, or £40 a building a liability of a million sterling.

The soldier can only trust in God and keep his powder dry, and the underwriter can only trust to limitation and distribution, with a prayer thrown in for a little luck, and be thankful such disasters come so seldom, and try to do his duty when they do come. We have the consolation that the British offices, one and all, large and small, have faced disaster resolutely and bravely, and have come out of this terrible ordeal with honour and credit. They sold fire

insurance, and they delivered the goods. In America to-day the agent who can say "British office" does not require to carry balance-sheets and comparative statements. After all, character and reputation are assets in themselves, even if they have been dearly bought in the present instance, and the offices have now the world before them from which to get back the money they lost in San Francisco, and to prepare for the next emergency, whenever and wherever it may arise. It is in the interest of the community that they should be both strong and numerous to bear and share the burden when that time comes.

APPENDIX.

No account of the conflagration would be complete without some reference to the light it throws upon questions of fire protection and fire-resisting construction. These have been carefully investigated both by the engineering experts of the Committee of Twenty of the National Board of Fire Underwriters and by Captain Sewell on behalf of the Engineers' Corps of the United States Army. The latter gained the impression that, taking into account the damage to internal portions of structures, framework, and foundations, the proportion of earthquake damage to the total damage by earthquake and fire was about 10 per cent. In the San Francisco fire, for the first time, the collapse of protected steel frames, due to the destruction of the fireproof covering at a comparatively early stage in the fire, was a matter of common occurrence. Practically none of the coverings except 4-inch brick and reinforced concrete were adequate. The terra cotta and the metal lathing and plaster coverings were absolutely inadequate. None of the columns covered with cinder cement suffered any serious damage, but there were not many protected in that way. In a column covered with four inches of cinder cement subjected to a very great heat the concrete was seriously damaged, but the column did not suffer.

The only office vaults which came through really fierce fire without damage were those built of brickwork, and these did not always suffice. Very nearly three-fourths of the safes in the San Francisco fire failed to protect their contents. That in itself was a serious complication in the settlements, both for the offices and the assured. Most companies were able to duplicate their records from other centres, but the great local office, the Fireman's Fund, and its subsidiaries, the Home Fire and Marine and the Pacific Underwriters, carrying among them, say, \$15,000,000 gross of risk in the burnt area, had all their records destroyed owing to the contents of their vaults bursting into flame the moment they were opened, weeks after the fire. As a result of destruction of records, more than one office paid under insurances which were actually not in force at the time of the fire.

General indications are that the heat generated was appreciably hotter than at Baltimore, the only previous great conflagration scientifically studied by expert fire-protection engineers, and temperatures of from 2000° to 2700° must have existed to produce the effects noted. All that survived the direct sweep of the fire were:—

- (a) An occasional grade floor in a fireproof building.
- (b) The empty shells of the fireproof buildings themselves, none of which had front window protection.

- (c) A window-protected partly-fireproof Government building, with a garrison of United States employees, who remained at their posts, aided by the engine of a visiting brigade.
- (d) Buildings in the side border of the wind sweep, where the exposure was confined to ignition by brands, and where men and apparatus could maintain a working basis.

Once the brigade was in retreat not only did all frame buildings succumb, but also all brick buildings having wooden floor beams, whether their construction was good, bad, or indifferent, with more or less complete structural ruin in every case, except perhaps that of the famous Palace Hotel, which, curiously enough, had previously been denounced as a "fire trap."

Without entering unduly into details, the following may be taken as the main lessons of the conflagration from the point of view of fire defence, in the opinion of the experts referred to:—

The paralysing effect of a number of simultaneous outbreaks of fire.

The weakening of the fire-fighting force as it thins out over a wide front.

The impossibility of front resistance to the sweep of the fire when the wind velocity exceeds a certain critical figure.

The ignitability in a conflagration of ordinary roofs, consisting as they do of wooden boards with a veneer of incombustible materials, and the consequent importance of fire-resisting roofs and roof structures, and of well-protected skylights.

The slight value as conflagration breaks of fireproof buildings when abandoned.

The possibility in conflagrations of saving buildings even with unprotected openings provided there are some men and water available, and the openings are few, and the consequent importance of encouraging individual protection by occupants of buildings.

The little reliance to be placed in street widths as positive conflagration breaks.

The importance of front as well as rear and side window protection.

The encouraging possibilities of reinforced concrete, and the importance of good engineering in its installation.

A feature brought into prominence with regard to fireproof buildings was that, while they may appear to have offered excellent resistance to fire, and look as though they could quickly be re-finished and ready for occupation, the salvage from an insurance point of view is apt to be very disappointing. Of course, one expects to find such buildings under-insured, but that contingency may be met by the imposition of the average or co-insurance

conditions in the policy. What comes as somewhat of a surprise is the percentage of loss to value which accrues. For example, the cost of the steel frame may average, say, 13 per cent. of the total cost, the floor arches, say, 5 per cent., and the brick exterior walls, say, 15 per cent.; but the bulk of the value, say, 67 per cent., is in other items, such as ornamental stone, decoration, finish, partitions, glass, interior light metal work, tiling and marble, plumbing, wiring, fixtures, and mechanical plant, all of which are apt to prove total losses. For this reason, and in consequence of under-insurance, many large fireproof risks in San Francisco which were in the first instance reported as partial losses of from 10 to 20 per cent. turned out practically total. It should be said, however, that fireproof buildings of the steel frame type as a rule showed no apparent structural injury as a result of the earthquake, whilst almost all others were seriously wrenched, warped, and strained, even where there was little structural damage apparent on casual inspection.

PAPER MILLS.

By J. H. CHAPMAN.

A Paper read before the Insurance Institute of Newcastle-upon-Tyne, 25th January, 1907.

"PAPER is made from the *rags* of things that did once exist ; there are endless excellencies in paper." So wrote Carlyle ; but from the "dateless past," ere paper was thought of, there is evidence that records have been made of outstanding events, if only by erections of earth or stone, and as civilisation slowly advanced various substances were brought into use upon which signs, symbols, or writings could be made of a more or less permanent nature. Stone, clay, leaves, skins, barks, wax, ivory, metal, and linen have all served this purpose. To select one ancient instance, Ezekiel (B.C. 596) received the command, "Thou also, son of man, take thee a tile, and lay it before thee, and portray upon it the City, even Jerusalem."

The great antiquity of paper manufacture is, however, undoubted. China and Japan both claim to have been early in the field, and it seems to be established that in the former country paper composed of vegetable fibre was produced as early as the second century B.C. Edward Gibbon, in one of the footnotes to his well-known History, states :—"The librarian Corsiri relates from credible testimony that paper was first imported from China to Samarcand A.H. 30, and invented, or rather introduced, at Mecca A.H. 88." Profiting by this introduction the Moors not only commenced the use, but learned the method of making paper, becoming their own producers, and, after the capture of Samarcand, carried the knowledge to Spain, where the manufacture was continued, from which country it spread in turn to France, Germany, and Italy. In England a mill for paper-making appears to have been working as early as 1588, and some desultory attempts may have been made before this. This mill was made

the subject of a long poem written by Thomas Churchyard in 1588, from which I venture to quote just a few lines.

"I prayse that first did paper make,
 The only thing that sets all virtues forth;
 It shoes new bookes, and keepees old works awake,
 Much more of price than all the world is worth;

Without whose help no hap nor wealth is won,
 And by whose ayde great workes and deedes are done."

The industry does not, however, seem to have made much headway with us until 1685, whilst the first mill in America, now by far the largest paper-producing country in the world, was erected in 1690.

The first patent for making paper in England was taken out in 1665 "for the way and art of making blew paper used by sugar bakers and others." A second patent was granted in 1675 "for the art and skill of making all sorts of white paper for the use of writing and printing, being a new manufacture and never practised in any way in any of our kingdoms and dominions."

Up to the commencement of the nineteenth century all paper was made by the slow and laborious hand process, but by the patent taken out by Henry Fourdrinier in 1806, a paper machine was introduced which has proved a brilliant and lasting success.

To-day hand-made papers are practically confined to bank-notes and the best drawing, writing, and book papers, the relative output being very limited, and the description which follows will be devoted to machine-made papers.

Unlike many other of our important manufactures, paper-making has not become centralised in some particular district, as this industry is to-day represented in England by 218 mills spread over 34 counties, whilst Scotland has 59, Wales 8, and Ireland 7; in all, 290 mills.

The base of all paper is cellulose or plant fibre, the constituents of which are carbon, hydrogen, and oxygen, the chemical formula being $C_6H_{10}O_5$. As this substance is present in all plants it might at first sight appear that there is an unlimited field from which to obtain supplies of raw material, but the product used, to be commercially successful, must not only be cheap and readily obtainable in large quantities, but also such as is most easily cleaned of intercellular matter—that is, all other substances

which have become incorporated with the woody portion of the plant during growth. Hence, whilst an astonishingly long list of plants might be given which have been experimented with and used more or less, the fibres in actual general use to any large extent are limited in number.

We need only refer to those commonly met with, such as linen and cotton rags, esparto, wood pulp, straw, ropes, bagging, various wastes, and old textile materials. As mentioned, rags were the first, and at one time practically the only, material used by the manufacturer, and linen rags still stand as the best substance from which to make paper. Esparto (which came into use in 1866) at a later period held the most prominent place in quantity consumed. Straw is not so freely utilised as formerly, and the quantity of ropes, bagging, and wastes is comparatively limited. In addition to those obtained in our own country, rags are imported from Germany, Holland, Belgium, France, and in lesser quantities from many other parts of the world. Esparto is a grass indigenous to the countries on the Mediterranean seaboard, our principal supplies coming from Spain and Algeria. Wood pulp, the home production of which is limited, is made in large quantities for our market in Sweden, Norway, Germany, Austria, and Canada. We did not become consumers of the material to any extent until the early seventies, but it is now used in huge quantities. Straw pulp is also imported to some extent from the Continent. The stupendous amount of paper used in this country may to some extent be realised when you refer to the table of imports attached to this paper, by which you will see that in addition to our home production we imported last year nearly £4,000,000 worth.

Turning to the manufacturing processes, I should like to mention that the young Surveyor, for whose benefit these Federation papers are largely written, must not expect to find the mills of a stereotyped pattern, either in disposition of buildings or in the plant they contain. Certain main processes, such as boiling, washing and beating, are found everywhere carried on in plant which does not vary much in general appearance, but, beyond this, equipments differ, systems vary, and the raw materials and the finished product in view, to a certain extent, govern the treatment adopted.

In a paper of this sort it is impossible to go into all the points of difference, and what has been aimed at here is a general purview embracing the main processes to be found in paper mills.

At this point it may be well to give a rough outline of the main processes.

Rags.	Esparto.	Ropes, Wastes, Old Textile Materials, Tarpaulins, &c.
Sorting. Cutting or Chopping. Willowing. Dusting.	Willowing.	Sorting. Cutting or Chopping. Willowing. Dusting.
Boiling. Breaking and Washing. Potching. Presse Pâte. Beating.		Boiling. Breaking and Washing. Beating.

WOOD PULP.

As already stated, it is exceptional to find a maker producing his own supply of this largely-used material, and at present I believe there are only four mills in the United Kingdom in which its manufacture is carried on. In the great majority of cases this pulp comes to the mills in thick sheets packed in bundles, really "half stuff" ready for breaking up in the cone breaker or beating engine. There are two kinds of wood pulp, mechanical and chemical. The former is disintegrated entirely by machinery, and the latter is reduced by a combination of mechanical and chemical agents. Both kinds may be obtained either bleached or unbleached.

RAGS, ROPES, BAGGING, WASTES, OLD TEXTILE MATERIALS, AND RAILWAY COVERS (TARPAULINS).

The materials just enumerated may all be found at brown paper mills, but usually only the first-named to any large extent at mills where other than "browns" are produced. Rags for better-class papers, after opening of the bales in which they arrive, are first sorted, the quality, colour, and nature of fibre all being taken into consideration.

HAND CUTTING.

They are then cut, for the very best papers often by hand, the work being done at a table covered with coarse wire-netting, divided into boxes for keeping the various kinds separate. In the centre of the table is a fixed knife in a position slanting towards the operator, who cuts the rags into small pieces by drawing them across or against this blade.

MACHINE CUTTING.

For machine cutting or chopping, a much more largely followed practice, there are several machines which deal with rags, ropes, bagging, wastes, &c. One commonly met with consists of a feed table with a fixed dead knife at end, working in conjunction with which is a revolving drum carrying three knives, which just miss contact with the fixed knife, the materials being carried through fluted feed rollers against the knives.

A machine of a different type, which also cuts all kinds of materials, is Nuttall's Patent Rag Cutter, which contains two guillotine cutters placed at right angles to each other. The material is carried by a travelling apron or creeper, and delivered by feed rolls under the first guillotine; the descending knife severs the material, which falls longitudinally on a second travelling apron running at right angles to the first, by which it is carried endways to the second guillotine knife. Thus rags, &c., can be cut into nearly square pieces, and almost any size desired. Sail cloths, railway covers, &c., are cut by hand into smaller sheets before being passed through a cutter.

WILLOWING AND DUSTING.

By willowing the fibres are further separated and dust removed. These machines consist of a feed table and rollers delivering into an iron casing containing two iron drums, both armed with teeth set so as to pass each other when running, with an iron-circled grating carried below the drums. The rags are thrown from one drum to the other (they can be run up to 300 revolutions per minute) and forward into the duster, a wooden compartment or casing containing a wire drum having internal lifting spikes or teeth, fixed at an angle for self-delivery.

The dust loosened in the willow is shaken out in the drum and falls into the wooden chamber.

Conical dusters are also used apart from willows, the cones being of iron wire fitted with lifting spikes, and the framework of wood. These revolve at a slow speed only.

Dusting of low-grade materials is sometimes carried out by simply lifting such from the cutting machine and passing it by hand over a table covered with coarse iron or wire netting. Willowing does not seem to be so much practised now as formerly, materials after cutting going direct to some form or other of duster.

STRAW CUTTING.

Straw is useful for mixing with other fibres, but will not of itself make a strong paper. It is first cut into short lengths by a straw cutter, consisting of an endless feed web and feed rollers, which carry the straw on to a dead knife, at right angles to which is a revolving wheel fitted with three knives. It is then dealt with in some kind of duster before being boiled.

ESPARTO.

This grass arrives in bales, usually bound with iron bands, but from one district with grass ropes.

When these are opened the esparto is passed through a willow or duster (sometimes called a thresher). These machines vary somewhat in detail, but in the main consist of a fixed outer arc and a revolving inner cone, both of iron (revolutions of latter up to, and 250 per minute), with teeth on each set so as to pass each other amicably when working. The under side of the outer cone is composed of a chequer-iron grating, and on its upper side is a feed hopper. When running, the grass is forked in through the hopper, thoroughly shaken up, the dust, sand, and other impurities falling out, and the grass being delivered through the large end of willow, which may open either into the boiling room, a feed room over the boilers, or it may have to be carried along a travelling table to this point from the willow. A blowing and exhaust fan is usually found working in connection with these willows, and a revolving rake is sometimes fixed at the delivery end. A machine of this kind is shown in Fig. 1.

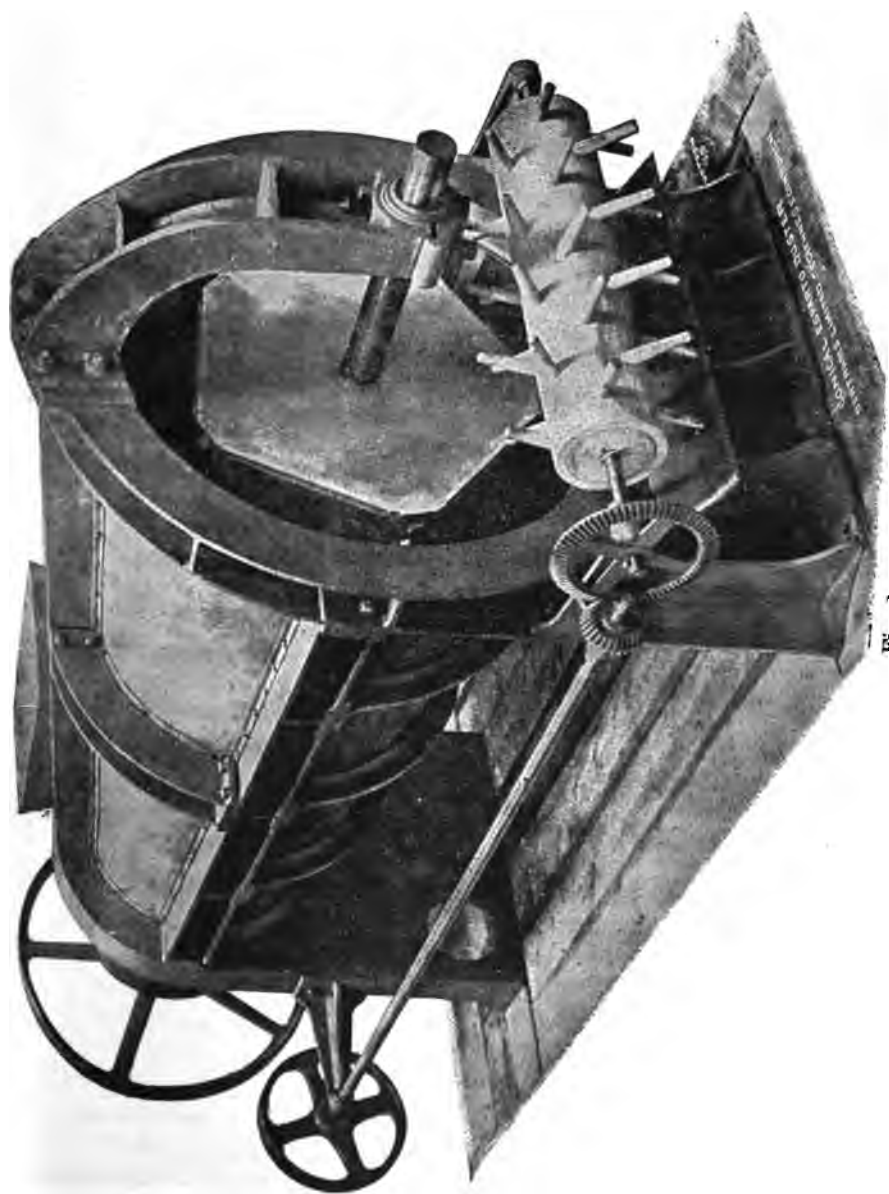
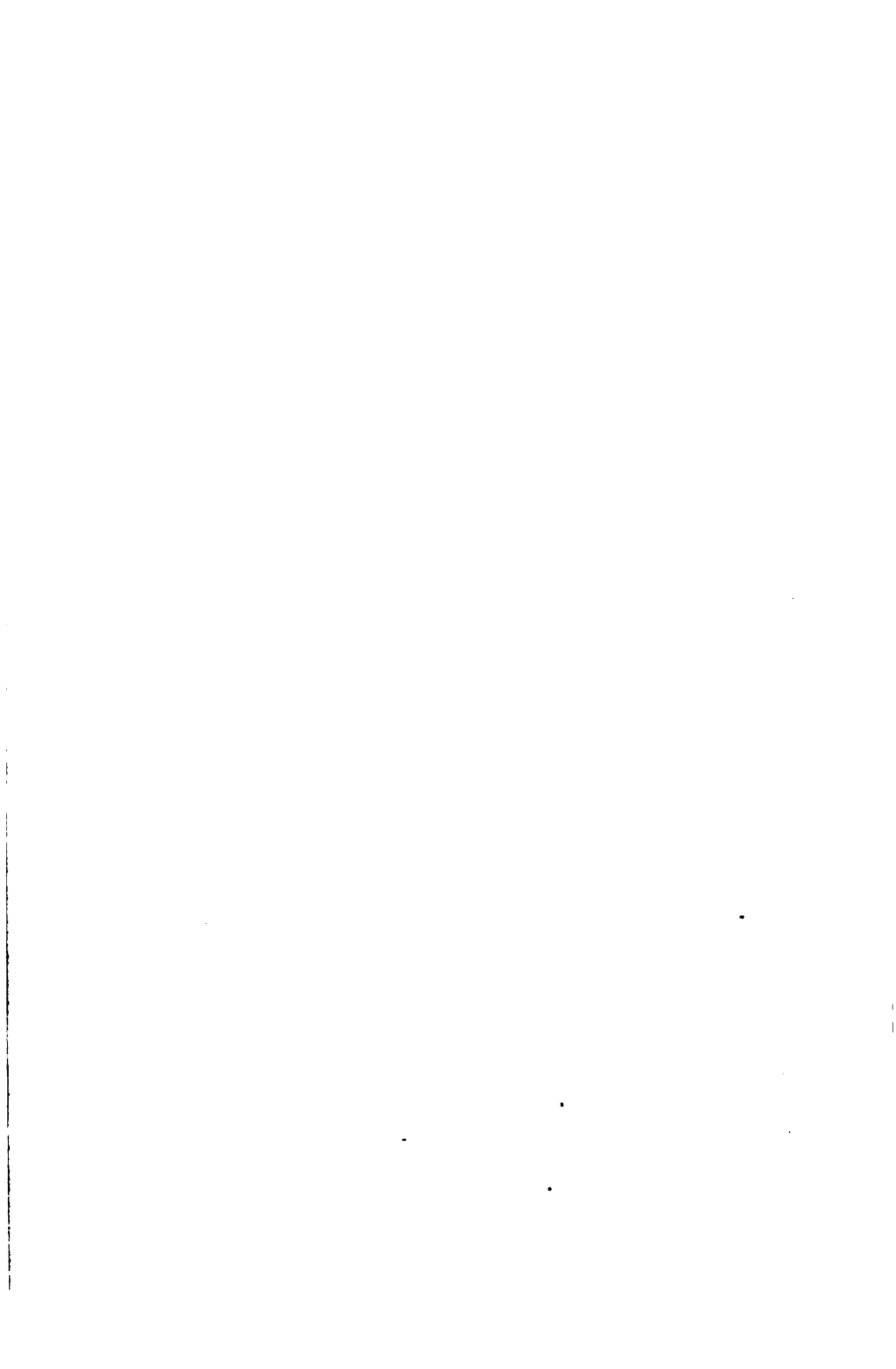


Fig. 1.
CONICAL ESPARTO DUSTER.



WASTE PAPER,

in the form of "broke" (i.e., paper spoilt in course of making), paper trimmings (shavings), also old news, account book, and other papers which have been used for printing, writing, etc., when worked up for better-class papers, are first sorted and then passed through a willow or duster.

Much of this material finds its way to "brown" mills, where such careful treatment is not necessary. Again, a mill using only its own "broke" need but pass it through a cone breaker, of course keeping the different colours separate, or it may be fed direct into the beating engines.

Our materials have now been brought to a point when the further processes they undergo prior to being made into paper have for their object the thorough cleansing of the fibre, its transformation into pulp, and the addition of such chemicals for bleaching, loading, sizing, and colouring as may be required for the particular kind of paper being made. As paper is nothing more or less than an aqueous precipitate of vegetable fibres, I mention now, in order to avoid undue repetition, that in every process, from boiling up to the moment the pulp passes on to the paper machine, water is used freely.

First comes

BOILING,

which is carried on in boilers, all of a closed type, which may be either rotary or stationary. Rags, waste paper, and other waste materials and straw are usually boiled in the former, in shape either cylindrical or spherical, fixed horizontally. Boiling is done under steam pressure, and caustic soda or lime in solution is used. The advantage of revolving boilers is obvious, as the liquor is thereby enabled to circulate and thoroughly permeate the materials, thus more completely obtaining the object in view—that of removing grease, colouring matter, and other impurities, or at least thoroughly loosening them so that they may be removed in the washing engines. After boiling, the liquor may be run off and water introduced for a preliminary washing in these boilers.

Esparto does not require such drastic treatment, which would also tend to injure the fibre, and it is customary to deal with it in closed vertical stationary boilers, which have internal channels for

carrying the lye up and showering it on top of the grass, through which it percolates continuously. When the boil is finished the liquor is run off to the evaporating house, and the grass is washed with hot water.

Figures 2, 3, and 4 respectively illustrate a revolving spherical, a revolving cylindrical, and a vertical stationary boiler.

BREAKING AND WASHING ENGINE.

This engine has for its object, in addition to washing, the breaking up or mixing of the fibres. The engine for this purpose (often spoken of as a rag engine) (Figure 5), is a cast-iron trough with rounded ends, having a partition in the centre (the "midfeather") not carried the full length of trough, a space being left at either end equal to that at sides, thus giving a channel of the same width round the whole circumference of the engine. On one side of the midfeather is a "roll" on which is fixed a series of steel knives or bars, whilst below this, on bottom of trough, is the "bed plate," also fitted with steel bars, the distance between the two sets of bars being altered to suit requirements by raising or lowering the roll. On the opposite side of the midfeather is a drum (drum washer) covered with wire or brass gauze, the drum being divided internally into compartments called "buckets." In some engines for grasses there are two drums, whilst stuff for "browns" which does not require washing is passed through an engine fitted with a "roll" but no "drum." When the engine is working the stuff passes under the roll between the two series of bars on one side of the midfeather to the drum washer on the other side, when the water runs through the gauze cover, which is too fine to permit the passage of fibre, and is discharged from the engine. The pulp is circulated round and round the trough until the water which is being constantly added appears clear when drawn off by the drum. The drum can be raised above the stuff when no longer required. The floor of all these engines on the roll side is inclined so as to bring the pulp more effectively between the two series of bars.

Bleaching may be done in this engine, or in the potching engine, where it is more particularly referred to.

Esparto is sometimes washed in a trough fitted with a drum only, and afterwards in revolving washers, which are simply finely-perforated metal cones laid in a slanting position over a trough into which the water falls.

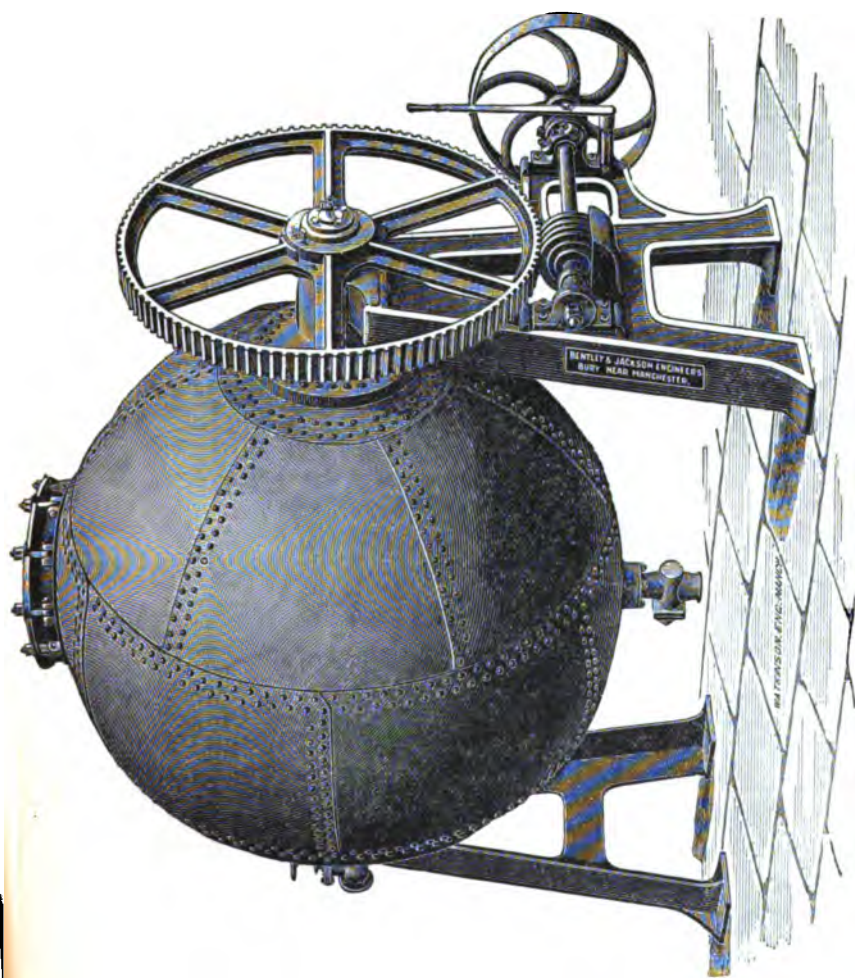


Fig. 2.
REVOLVING SPHERICAL BOILER.

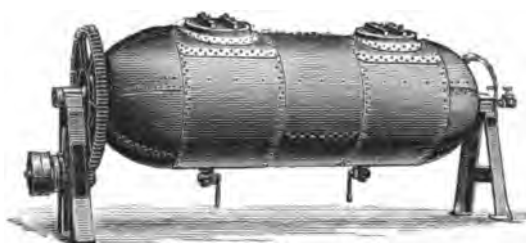


Fig. 3.
REVOLVING CYLINDRICAL BOILER.

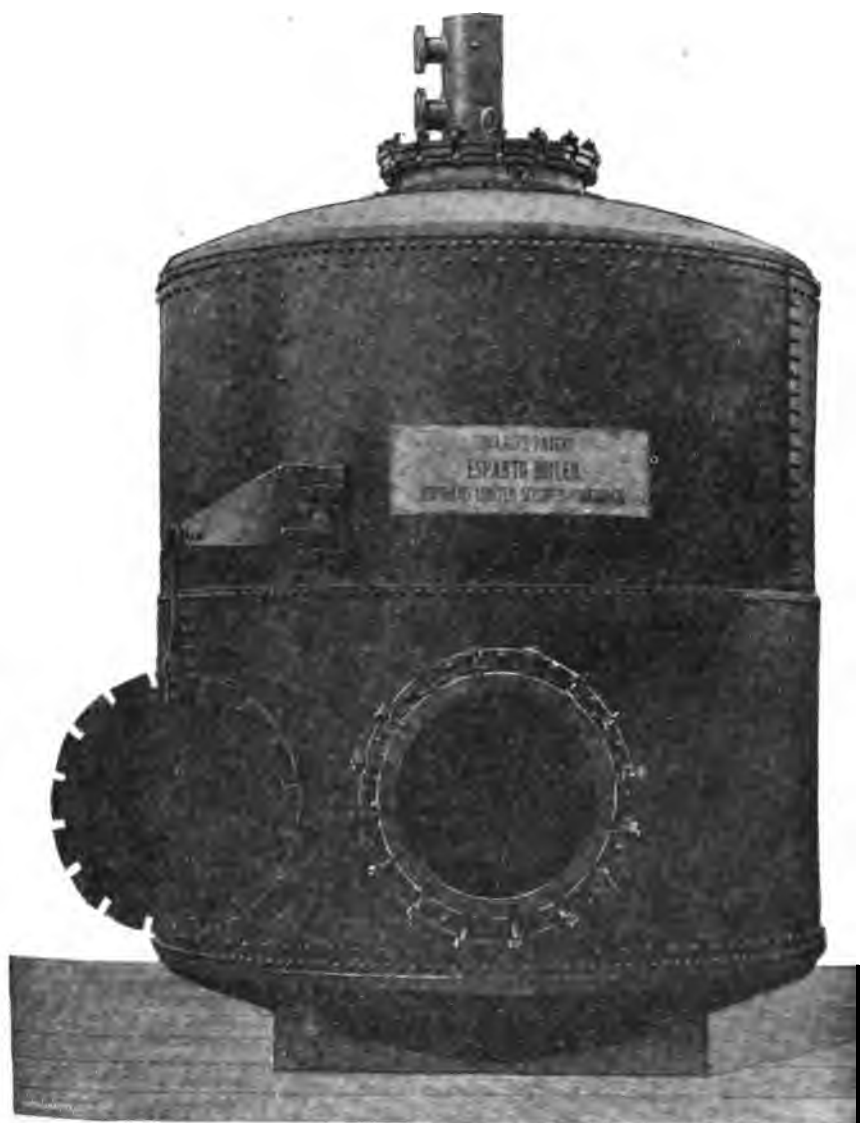


Fig. 4.
ESPARTO BOILER.

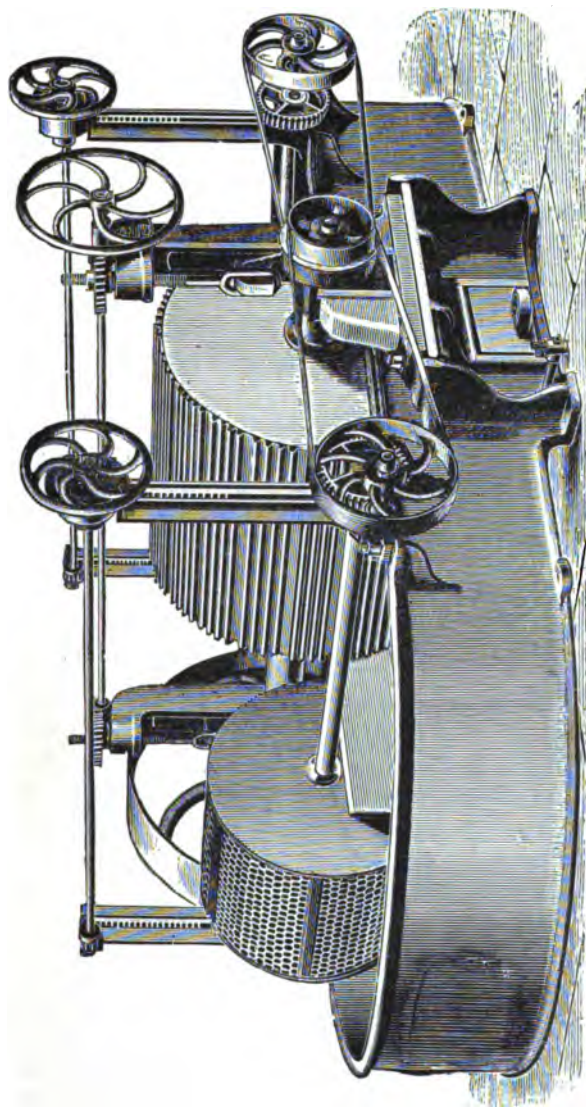


Fig. 5.
BREAKING AND WASHING ENGINE.

After washing the half-stuff passes to vats or drainers, and is next brought to the

POTCHING OR POACHING ENGINE,

which in general appearance is similar to the breaking and washing engine, being furnished with a roll carrying paddles (in place of knives) and a drum covered with a finer gauze than that used in the washing engine. At some mills esparto, after boiling, is washed in this engine. A later type consists of a trough having a drum washer but no roll, a centrifugal pump being fitted to circulate the half-stuff, which is here further mixed and brought into a suitable condition for bleaching, a process performed in this engine by means of chloride of lime or some such bleaching agent.

To neutralise the bleach after it has done its work, some antichlor is added, either here or in the beating engine.

The half-stuff is once again passed to chests, vats, or drainers, and then either to the beating engines, or some pulps are passed over sand tables and through strainers as adjuncts to and before being run on to the

PRESSE PÂTE

(Figure 6), which in general details is similar to the paper-making machine after described, but without the drying cylinders, and the thick wet web (in appearance very like a light blanket or thick blotting paper) as it comes off this machine is taken away in trucks and stored ready for use in the beating engines as required, or broken off and dropped once more into a stuff chest, where it is again mixed with water before passing to the beating engine.

CONE BREAKER.

This machine is used for reducing "broke" papers, wood pulp, etc., prior to being fed into the beating engines.

Also esparto, after boiling, may be passed through a breaker, which results in the stuff being thoroughly broken up, so that much of the impurities it contains, such as sand, other grasses, etc., are caught in the sand traps and strainers, on to which it is next run prior to washing; some makers, on the other hand, catch

these impurities after washing. The machine consists of an outer iron casing and revolving inner cone (making about 150 revolutions per minute), both armed with teeth.

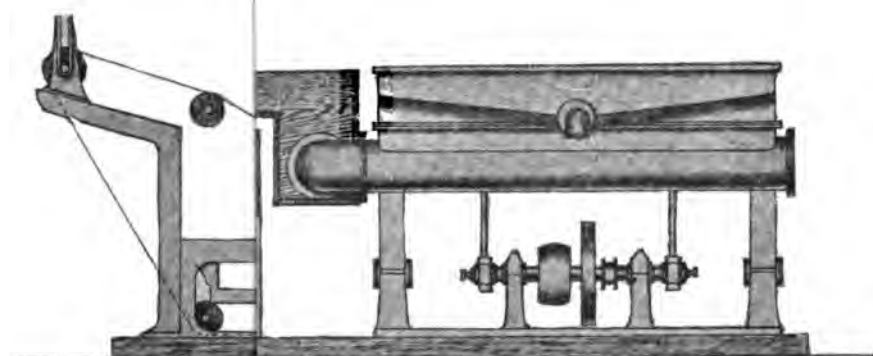
KOLLER GANG OR EDGE RUNNERS.

Another and older type of reducing machine is known as the Koller Gang or edge runners, and consists of a cast-iron dish, granite bedstone, and two vertical granite edge runners. We are all of us familiar with a machine of the same type in the common mortar mill.

BEATING ENGINES.

These engines have again a family likeness to the rag engine, being fitted with a midfeather. The roll, however, carries a much larger number of knives, and revolves more rapidly, but there is no drum except in case of compound washing and beating engines. In place of a midfeather another and later type of beating engine is divided horizontally half way up trough, forming an upper and a lower channel. The half-stuff passes through the tunnel and over the top, the roll being fixed in upper part of engine with bedplate beneath. Figure 7 illustrates the exterior of the "Acme" beater, an engine of this type, whilst Figure 8 clearly indicates the interior, showing the bedplate and roll, the division between the two channels, and the Archimedean screw by which the pulp is raised from the under to the upper channel. In the beating engine the half-stuff, which may have come either from the breaking engine, the potching engine, or the presse pâte, is cleared of bleach, and in turn loading, sizing, and colouring matter are added and worked up with the pulp, the two former for the purpose of producing weight, body, strength, and finish.

To neutralise the bleach some "antichlor," commonly either hyposulphite of soda or hyposulphite of lime, is used. Loading is effected by the addition of china clay, pearl hardening, or some like substance. Sizing (known as engine sizing) is obtained by the introduction of resin soap, to which, for certain papers, starch paste is added, and after the size has been thoroughly mixed with the pulp, to make it fully effective a certain quantity of alum or sulphate of alumina is incorporated. Even pulp having a pure white appearance in the beating engine would have a yellow shade



RCH.





Fig. 7.
"ACME" BEATING ENGINE—EXTERIOR.



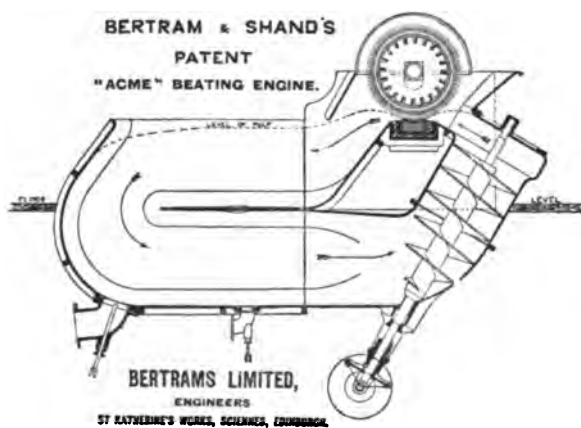


Fig. 8.
"ACME" BEATING ENGINE—SECTION.

when made into paper if small quantities of blue and pink colouring matter were not added. Various aniline colours and other pigments are used to produce the different tints and colours desired, and when these have been thoroughly worked up with the pulp it is ready for the paper machine, and is run off to the stuff chests for use as required. When necessary to counteract frothing some mineral oil or frothing mixture which contains mineral oil is introduced into the beating engine. Blending of different materials may be done in raw state before boiling, or in the beating engine when the half-stuff stage has been reached.

REFINING ENGINES.

Where these engines are used they intervene between the beaters and paper-making machine; their object is the further refining and assimilation of the pulp, and it is claimed that by their use a saving of beating power is effected and an increased quantity and quality of paper obtained. Figures 9 and 10 give interior and exterior views respectively of one of this type of engines. The machine consists of a vertical revolving disc fitted with knives on both sides (see to left in illustration), as are also the inner sides of stationary plates at either side forming part of the outer casing. The disc makes up to 300 revolutions per minute.

PAPER-MAKING MACHINE.

The pulp from the stuff chests is pumped in turn to an elevated supply box or regulating box, then passes along sand traps or sand tables forward to strainers (these may be oscillating trays or revolving cylinders), and thence to a vat or trough fixed at one end of the paper-making machine, which at this end is fitted with an endless wire cloth stretched on two rollers (called respectively the breast roll and the lower couch roll), which keep it taut and at the same time continually moving. The frame in which this cloth is fixed has a lateral, or what is commonly called a shogging motion or side shake. Underneath the cloth for most of its length is a series of small brass rollers (which keep it perfectly level), and at the further end are suction boxes (connected with vacuum pump), whilst below the brass rollers is a box called the "saveall."

At either side of the wire cloth are endless bands of rubber called "deckles" (which regulate the width of the paper being

made), mounted on pulleys and moving at exactly the same speed as cloth. A pair of couch rolls is fixed at opposite end of wire cloth, the lower one carrying the cloth as already indicated, and beyond these rolls is an endless felt web which passes round the first press rolls; another web passes round the second press rolls, and these in turn give place to drying cylinders.

The volume in which the pulp is run from the supply box, and the speed at which the machine is worked, settle the thickness or weight of the paper, and the fineness of the wire cloth is another factor fixing the quality of the paper.

As the mixture of pulp and water is run on the machine it may be, to use a familiar simile, as thin as the thinnest skim milk. The pulp is run over a short rubber apron on to the wire cloth, the combined forward and side motion of which serves to work the fibres together and set up the felting process aimed at, whilst at the same time the water is liberated and escapes through the wire cloth, being caught in the "saveall." More is extracted as the pulp passes over the suction boxes, and the couch rolls covered with felt serve to express further moisture as the web passes off the wire cloth to the endless revolving felt web ("wet felt"), which carries it forward to the first press rolls; another endless felt takes it to the second press rolls, when it has become strong enough to do without special support.

The web then passes round a series of steam-heated drying cylinders, usually over the first alone, but held against the remainder by felts, and before being entirely dried is pressed between chilled iron smoothing rolls (steam-heated), and then over further drying cylinders to complete the drying process.

It is then run between stacks of calender rolls (steam-heated), the heat and pressure combined producing a glazed surface, and then reeled ready for removal. Figure 11 gives a very complete illustration of one of the latest type of paper-making machines, which is worked from the breast roll to the reel by a single rope, and in addition to the features named has a pair of cooling rolls and a spray damper intervening between the calenders and the reel, thus in one continuous process preparing the web for the super-calendering referred to subsequently.

DANDY ROLL.

When paper is required to be water-marked this is effected by what is known as a "dandy roll," a light wire cylinder or skeleton

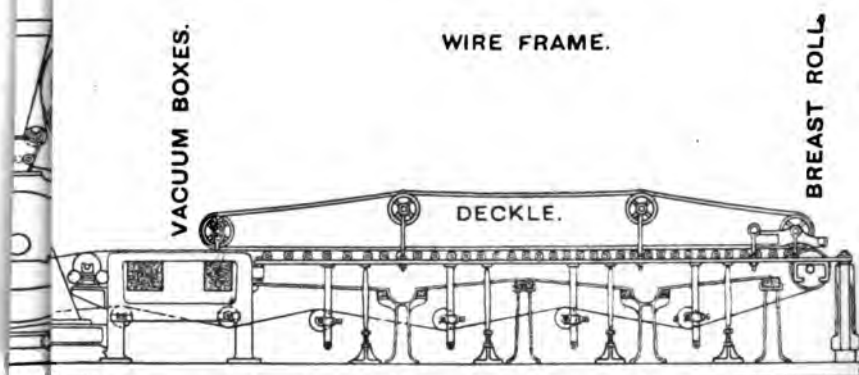


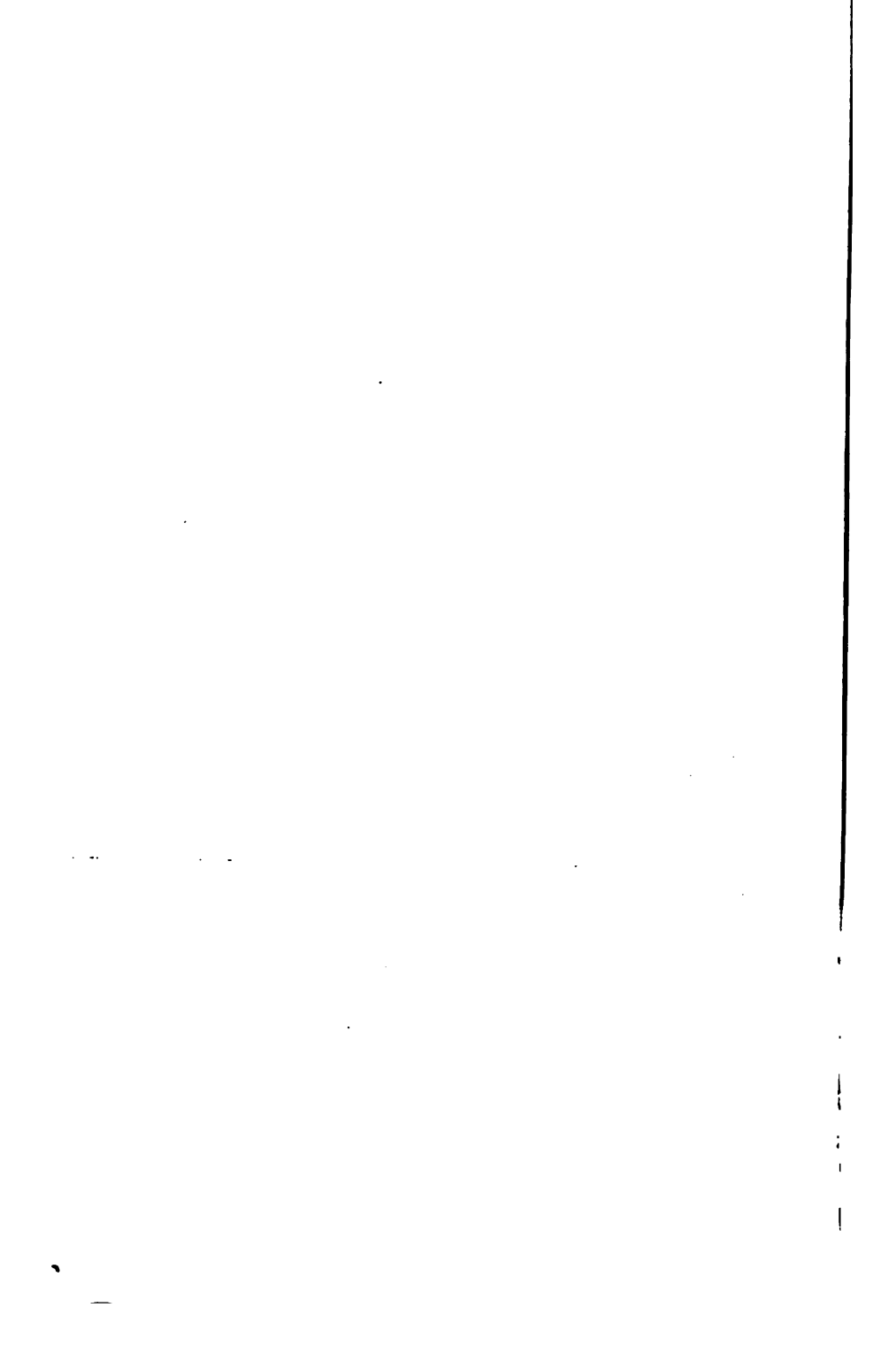
Fig. 9.
REFINING ENGINE—INTERIOR.





Fig. 10.
REFINING ENGINE—EXTERIOR.





roller bearing a raised lettering or design. This roll is placed above the wire cloth, and whilst revolving impresses its pattern on the soft web just as it is reaching the consistency of paper before passing through the couch rolls.

DOCTOR.

The upper roll of the first press rolls is fitted for its full length with a knife called the "doctor," for removing all particles of paper which become attached to it.

SAND TABLES OR TRAPS, AND STRAINERS.

These have been referred to several times. The former are wooden troughs, across the bottom of which bars of metal or strips of wood are fixed, and as pulp and water are fed in and flow along the trough, sand and other solid matter settles and is caught by these bars or laths. The latter (strainers) are of two types, flat and rotary. The flat strainer consists of cisterns or vats with metal bottoms, in which are narrow slits of an inverted V shape, to which a vibratory or jogging motion is given, and the pulp thus readily passes through whilst knotted or twisted fibre is retained.

ROTARY STRAINERS.

These consist of a metal cylinder in a feed trough, the slits in the cylinder through which the pulp is forced and thereby strained being cut to any size required. These cylinders may have a combined revolving and jog or knocking motion, or they may revolve only, and the pulp be forced through the slits by a plate below which has a jogging motion.

SAVEALL.

The water and pulp caught in the savealls is carried away and filtered, all the pulp in suspension being recovered.

SINGLE CYLINDER PAPER MACHINES

are used for making very thin papers glazed on one side. Briefly described, they have the usual wire cloth, couch rolls, press rolls,

and endless web from the couch roll which carries the paper on to a large drying cylinder, usually about 9 feet in diameter, superimposed above part of the machine, and from this cylinder it is wound on to a reel. Figure 12 illustrates one of these machines.

A quite different kind of single cylinder machine has a drum covered with fine wire cloth revolving in a pulp chest, reminding one somewhat of the drum washer previously described. As the water is drawn through the meshes, the fibres adhere to the wire cover, and this sheet of fibre is transferred to an endless felt on a couch roll, and it then passes on to the cylinder as just described.

SUPER-CALENDERING.

In addition to the finish or surface given to paper in the paper machine for many uses it is further glazed, or what is known as super-calendered, to any degree of finish required.

WEB GLAZING CALENDER.

Figure 13 shows one of these calenders, which consists of a perpendicular series of polished rolls constructed respectively of cast or chilled iron, and compressed cotton or paper on an iron core. The paper is damped before the process, and some of the metal rolls are heated sufficiently to dry out the moisture.

FRICTION GLAZING OR BURNISHING

is another method of producing a finely-polished surface, the rolls in this case being also superimposed and made of iron and compressed paper. The iron rolls are smaller and revolve much faster than the paper ones, thus producing the friction which gives the process its name.

PLATE GLAZING.

Some high-class papers in sheets are super-calendered by being laid singly between polished plates of either zinc or copper, a pile of which is then placed in a machine fitted with two rollers, the bundle being moved backwards and forwards under pressure between these.

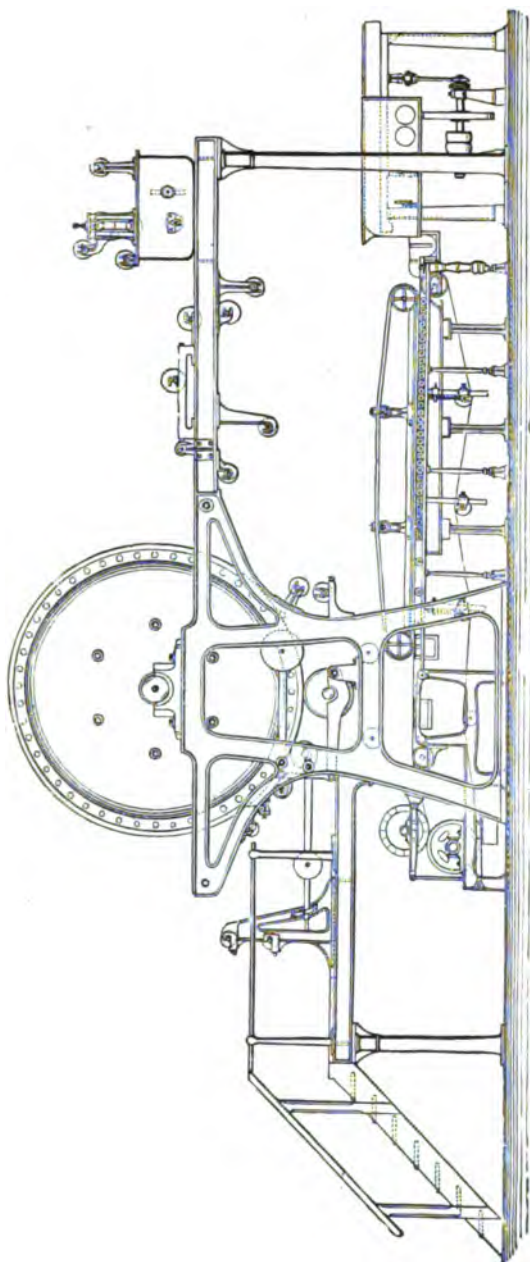


Fig. 12.
SINGLE CYLINDER PAPER MACHINE.

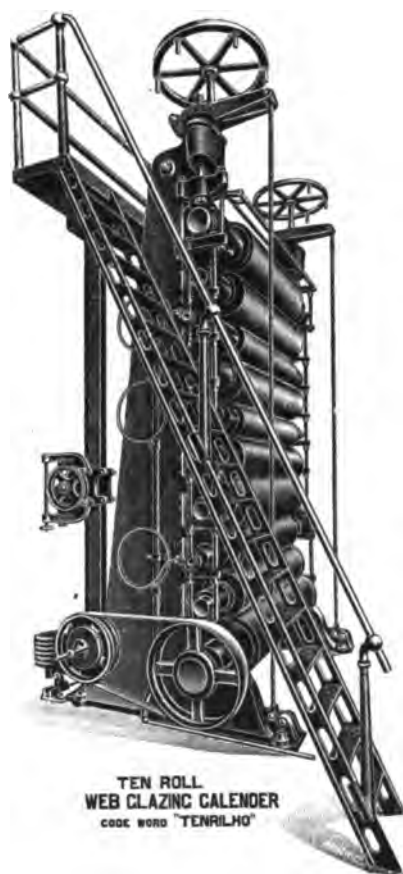


FIG. 13.
TEN ROLL WEB GLAZING CALENDER.



MACHINE SIZING, TUB SIZING, OR ANIMAL SIZING.

These terms all refer to the same process, which is carried out in connection with double-sized papers. For this purpose, after being partly dried on cylinders, the paper is passed through a sizing tub containing animal size, then squeezed by rollers and gradually dried by being led over a series of sparred drums inside which fans rotate, and there are also steam pipes underneath the machine to assist the drying action of the fans.

SLITTING AND REELING MACHINES.

A large quantity of paper is manufactured for use in continuous printing machines, and this is sent away in the web. The reels on which these webs are wound are carried from the paper making machine to slitting and reeling machines, which trim the edges, cut the paper into widths, and re-reel it.

CUTTING AND SLITTING MACHINES

are used for papers to be cut into sheets. The essential features of these machines are two shafts carrying circular slitting knives, which cut the paper to the required width as it passes between them, and forward to a cross-cut knife on a revolving drum (working against a fixed knife), which cuts it into lengths. As many as a dozen reels may be cut by the same machine at one time, the webs being joined in one lot at the "gathering rolls," then cut by the slitters and held up against the dead knife by nipping rolls. There are also angle paper cutters which cut sheets at any angle up to 45 degrees.

FINISHING DEPARTMENT.

We now come to the last department, often known as the "salle," which many times is corrupted to "sol," and I know of no dividing line by which we could say what this department should or should not embrace. A certain amount of calendering, cutting, and slitting is commonly done here, but its principal use may be said to be the careful examination of the papers sheet by sheet, all "broke" being rejected, the cutting of sheets into smaller sizes, or trimming of edges by the guillotine, counting into reams, parcelling, packing, and warehousing of finished paper.

An hydraulic press may usually be looked for in this department.

Brief reference must be made to some processes incidental to paper-making.

RESIN SOAP MAKING

(for sizing) is carried on in steam-jacketted pans, the materials used being resin and soda ash, or crystal soda reduced in water.

BLEACHING POWDER

is reduced to solution by the addition of water in large tanks or vats fitted with an agitator.

CHINA CLAY

(for filling or loading), in similar vats, is made into a thin cream with water.

ANIMAL SIZE

is obtained from hide cuttings and parings, which are soaked in lime and water, then washed prior to being boiled in a steam-jacketted pan, when the size is extracted.

SODA RECOVERY

from spent lye by means of evaporation and incineration. There are several systems for this purpose. When evaporation of the liquor is completed the residue is conveyed to slowly-revolving iron cylinders with a furnace at one end venting into the cylinder. As the mass dries it fires, and all the combustible material is burnt off. The soda ash remaining is discharged automatically or otherwise, allowed to thoroughly cool before being carried to the lixiviating or dissolving tanks, where lime is introduced by which the ash is recausticised and ready for use again.

No attempt is being made to deal here with specialities such as waterproof, transparent, tracing, stained and varnished papers.

In closing this section of the paper I would wish to say no one could be more sensible than myself that the descriptions given of

machinery do nothing like justice to its skill and ingenuity; only the most prominent features have been mentioned, the limits of a paper of this nature rendering full details impossible.

Taking a rapid survey of Paper Mills from a purely Insurance standpoint, the following general features may be noted:—

CONSTRUCTION AND DISPOSITION.

The buildings in their construction present no features out of the ordinary. Some few small erections and the raw materials stores are not uncommonly lightly built of iron or wood. With the exception of such buildings as have just been named, some few other small buildings, and soda recovery department, mills commonly form a continuous range of buildings connected throughout. It is customary to find one or more cut-offs by means of fireproof doors, and in many instances these are effective, but it must be confessed that the opposite is at times the case. Often so-called fireproof doors are defective either by reason of age, poor construction, or bad fixing, and any value they possess is negated by the fact that they are seldom closed. This question of seeing that any fireproof doors mentioned in a policy are kept in thorough order, and not only capable of being readily closed, but that they are regularly shut when the mill is standing, merits more attention than it seems to obtain, and notice boards on the point would be of real value.

LIGHTING, POWER, HEATING.

The growing use of the electric light is without doubt an improvement on gas, always assuming the installation is properly carried out to meet the conditions prevailing. Electric driving is also steadily supplementing or supplanting steam and gas power, and with the same proviso applied the development is one that may be welcomed. In the paper mill proper steam heat only may be looked for in all the processes requiring artificial heat.

MATERIALS USED.

The raw materials stores have each their pronounced but varying hazard. In the case of many of the substances spontaneous combustion is a factor of importance. In this respect brown paper

mills stand in a class by themselves, the materials used being, as already indicated, of a very miscellaneous character. For "printing" and "news" and white and tinted papers of various kinds, wood pulp, esparto, rags, and straw may be principally looked for, and limited quantities of various other materials. A very large quantity of paper is to-day made entirely from wood pulp. For the very best quality papers rags only of a high grade are still utilized. On the question of materials and their storage, it seems to me that the average paper mill has improved in recent years. On the one hand, I think makers are more fully alive to the desirability of well isolating these stores; on the other hand, the bulk of inflammable materials has been reduced consequent on the large use of wood pulp, which arrives at the mills in a condition suggesting no particular fire hazard. This pulp is sold to paper makers as "dry" and "wet," the former usually carrying a guarantee that not more than 10 per cent. of moisture is present, the latter not more than 50 per cent. The predominant lead this material has taken will be seen from the list of imports given at the end of this paper. Starting from a consumption of about 12,000 tons annually, in 1890 the imports reached 137,837 tons, which in 1906 had risen to 606,791 tons—this in addition to the home production, the figures for which I have not been able to obtain. You will also notice from these returns that the use of esparto is diminishing.

MECHANICAL PROCESSES.

In the mechanical processes chopping or cutting and the willowing of materials are the only points at which any pronounced inherent fire hazard appears to be entailed. In these, however, by friction in the machinery or hard substances in the materials, the possibility of heating or sparking and consequent fire cannot be overlooked. From the succeeding stages of boiling up to the time the pulp passes on to the paper-making machine, all the processes are wet in the fullest sense of the word, water being added or present continuously.

WORKING HOURS.

The time a mill is standing is usually very short, as it is the practice to run double shifts, so that work is going on continuously from, say, midnight on Sunday to two o'clock on Saturday.

In viewing the general position, I would briefly put forward the following obvious suggestions as being desirable conditions—again let me add, from our point of view :—

(1) The position of raw material stores should be carefully considered on the score of exposure hazard, particularly in districts where high winds prevail.

(2) The question of artificial lighting (if electricity is not available) in these stores and in buildings where sorting, chopping, and dusting of raw materials are carried on should have special attention, both as regards the position of gas brackets and their protection ; cages or lanterns, whilst in some measure isolating the flame, become resting-places for dangerous accumulations of dust unless constantly cleaned, and opinions differ as to the real utility of at least the former mode of protection.

(3) That all the foregoing buildings in which dust is produced and bound to accumulate should be regularly cleaned down.

(4) That the sorting, chopping, and willowing house should be cut off as effectively as possible from the remainder of the mill.

(5) That supplies in boiling-house of dry raw materials should be kept as low as possible.

(6) That fire-extinguishing appliances of a really effective nature, kept in good order, and with men regularly drilled in their use, are of paramount importance, especially in isolated districts.

FIRE RECORD.

The appended list of fires which have occurred during the last ten years has been completed from particulars collected with the kind assistance of various Institutes, assessors, and private individuals.

The reader may study this list for himself and draw his own conclusions. It will be noticed that a large proportion of the fires have occurred between the time the mills closed on Saturday and re-opened on Monday.

My hearty thanks are tendered to Messrs. Bertrams (Ltd.), Sciennes, Edinburgh, and Messrs. Bentley & Jackson (Ltd.), Bury, for the loan of the blocks with which this paper is illustrated, as under :—

Blocks Nos. 1, 4, 6, 7,
8, 9, 10, 11, and
13, - - -

Bertrams (Ltd.), Edinburgh.

Blocks Nos. 2, 3, and
5, - - -

Bentley & Jackson (Ltd.), Bury.

IMPORTS OF PAPER-MAKING MATERIALS AND PAPER.

	1904.		1905.		1906.	
	<i>Tons.</i>	<i>Value. £</i>	<i>Tons.</i>	<i>Value. £</i>	<i>Tons.</i>	<i>Value. £</i>
Rags ..	22,186	196,016	23,681	224,232	22,246	216,560
Esparto and other Vegetable Fibres ..	200,245	746,489	191,114	724,552	188,238	677,318
Wood Pulp	569,245	2,521,048	578,012	2,759,627	606,791	2,915,209
	<i>Cwts.</i>	<i>Value. £</i>	<i>Cwts.</i>	<i>Value. £</i>	<i>Cwts.</i>	<i>Value. £</i>
Paper unprinted	4,440,927	3,462,565	4,869,649	3,644,887	5,545,810	3,996,874

APPENDIX.
FIRES IN PAPER MILLS—1897 TO 1906 INCLUSIVE.

Date.	Situation.	Time of Outbreak.	Day of Week.	Part in which Fire originated.	Supposed Cause.	Approximate Amount of Loss.
1897.						
Jan. 10	Denton.	8.50 p.m.	Sunday.	Salle.	Not known.	\$ 3,650
May 11	Auchmill.	3.30 a.m.	Tuesday.	Esparto dusting house.	Man smoking.	480
June 13	Bathgate.	2.0 a.m.	Sunday.	Evaporating house.	Overheating of flue.	250
" 19	Feniscowles.	5.45 p.m.	Saturday.	Chemical mixing and sundries store.	Not known.	16,520
Oct. 15	Rutherglen.	2.0 a.m.	Friday.	Esparto store.	Do.	3,544
" 20	Otley.	2.30 a.m.	Wednesday.	Rag store and boiling house.	Match dropped.	2,000
1898.						
Feb. 9	Glasgow.	11.30 p.m.	Wednesday.	Rag boiling house and rag store.	Not known.	1,279
" 10	Glasgow.	3.0 a.m.	Thursday.	Store.	Heat from steam boiler firing beam.	75
March 16	Slaford.	4.0 a.m.	Wednesday.	Paper store.	Spark from boiler chimney.	670
June 1	Cardiff.	...	Do.	Materials (waste paper, jute, rag, &c.) store, chopping and boiling house.	Spontaneous combustion.	2,000
" 5	Linlithgow.	4.0 a.m.	Sunday.	Machine house.	Oily waste or use of lights by watchman.	4,700
Aug. 13	Currie.	6.0 a.m.	Saturday.	Willowing room.	Esparto passing through willow igniting.	4,400

APPENDIX—continued.

Date.	Situation.	Time of Outbreak.	Day of Week.	Part in which Fire originated.	Supposed Cause.	Approximate Amount of Loss.
1898.						£
Sept. 28	Watchett.	1.0 a.m.	Wednesday.	Paper bag drying room.	Defective boiler flue.	14,875
Oct. 7	Chirnside.	10.0 a.m.	Friday.	Size house.	Spark from lamp igniting oil on floor.	216
Dec. 22	Radcliffe.	10.30 a.m.	Thursday.	Paper cutting room.	Not known.	97
1899.						
Jan. 26	Luddenlen.	3.30 a.m.	Thursday.	Engine house.	Ignition of match boarding behind fly-wheel of engine.	85
May 14	Dartford.	...	Sunday.	..	...	1,200
June 12	Leven.	1.30 p.m.	Monday.	Open yard.	Workmen smoking.	35
July 11	Linlithgow.	7.0 a.m.	Tuesday.	Esparto willowing room.	Friction or hard substance in willow.	30
" 29	Radcliffe.	9.30 p.m.	Saturday.	...	Not known.	90
" 31	Oughty Bridge.	9.40 a.m.	Monday.	Waste paper sorting room.	Friction in duster.	18,050
Oct. 23	Stainland.	10.30 a.m.	Do.	Cellar.	Accident with oil lamp.	38
Nov. 22	Glasgow.	7.0 a.m.	Wednesday.	Esparto store.	Unknown.	1,534
" 30	Dartford.	...	Thursday.	...	...	1,250
Dec. 25	Markinch.	4.0 p.m.	Monday.	Gas generator house.	Dropping of lamp	12
" 27	Airdrie.	...	Wednesday.	...	...	1,056

APPENDIX—continued.

Date.	Situation.	Time of Outbreak.	Day of Week.	Part in which Fire originated.	Supposed Cause.	Approximate Amount of Loss.
1901.						£
Sept. 25	Bury.	11.0 p.m.	Wednesday.	Lumber and storerooms.	Not known.	15
" 23	Preston.	3.40 a.m.	Saturday.	Engine house.	Do.	1,150
Dec. 6	Lewen.	3.0 a.m.	Friday.	Wood pulp store.	Hot ashes igniting door in gable.	225
16	Darwen.	4.0 a.m.	Monday.	Offices.	Not known.	45
1902.						
March 15	King's Norton.	1.0 p.m.	Saturday.	Open yard.	Spark from ashes on refuse heap.	18
May 16	Bolton.	12.50 p.m.	Friday.	Engine house.	Friction in pulley.	650
" 29	Barnsley	12.45 p.m.	Thursday.	Warehouse.	Incendiarism.	1,196
June 2	Airdrie.	10.45 a.m.	Monday.	Rag cutting and dusting house.	Match amongst materials passing through rag willow.	148
July 1	Lælie.	7.0 p.m.	Tuesday.	Rag and waste store.	Either spontaneous combustion or match amongst jute bagging.	70
" 3	Barnsley.	12.50 p.m.	Thursday.	Waste paper store.	Incendiarism.	1,592
" 25	Glasgow.	7.0 p.m.	Friday.	Rag cutting house and store.	Sun's rays shining on a heap of greasy materials.	1,156
Aug. 10	Markinch	3.30 p.m.	Sunday.	Wood pulp store.	Children playing with matches.	77
Oct. 5	Clondalkin.	2.15 a.m.	Do.	Rope store.	Unknown.	500

APPENDIX—continued.

Data.	Situation.	Time of Outbreak.	Day of Week.	Part in which Fire originated.	Supposed Cause.	Approximate Amount of Loss.
1904. 26 March	Little Eaton.	1.15 a.m.	Saturday.	Stores.	Not known.	£ 1,800
May 13	Chirnside.	Night.	Friday.	Incinerating house.	Ignition of deposit from soda ley during evaporation.	110
June 12	Auchmill.	8.50 a.m.	Sunday.	Engine house.	Lamp igniting ropes.	514
Aug. —	Burnley.	Afternoon.	...	Waste paper stores.	Incendiarism.	3,127
Nov. 12	Inverurie.	11.30 a.m.	Saturday.	Machine house.	Small naked lamp.	22
1905. 16 Jan.	Pendleton.	1.0 p.m.	Monday.	Engine house.	Overheated bearing.	340
" 28	Airdrie.	...	Saturday.	Paper machine house.	Naked light coming in contact with felt blanket in machine.	25
" 29	Church.	8.0 a.m.	Sunday.	Engine house.	Overheated boiler flue.	118
June 20	Colinton.	3.0 p.m.	Tuesday.	Breaking and beating engine house.	Sparks igniting rubbish in louvres.	12
July 16	Henley-on-Thames.	10.30 p.m.	Sunday.	Warehouse.	Light thrown down.	77
Aug. 14	Kilbagie.	9.0 p.m.	Monday.	Esparto dusting house.	Match on floor.	12,800
15	Birmingham.	2.15 p.m.	Tuesday.	Open shed.	Not known.	90
Sept. 7	Denny.	8.0 p.m.	Thursday.	Engine and dynamo house.	Spontaneous combustion of oily waste.	2,114
" 13	Nottingham.	8.0 p.m.	Wednesday.	...	Light thrown down.	100

Nov. 10	Denny.	6.30 p.m.	Friday.	...	Short circuit in cable to motor; insulation rotted by damp.	19
Nov. 17	Wakefield.	11.45 p.m.	Friday.	Bagging, rags, &c., store.	Vagrant supposed to have got in to sleep on materials.	1,385
1906.						
Jan. 10	Airdrie.	2.30 a.m.	Wednesday.	Rag sorting house.	Not known.	14
April 15	Darwen.	12.45 p.m.	Sunday.	Stores.	Do.	740
May 10	Rishton.	9.30 p.m.	Thursday.	Motor room.	Friction in shaft bearing.	332
June 6	Ballyclare.	4.0 p.m.	Wednesday.	...	Match or smoking.	280
" 7	Glasgow.	6.0 p.m.	Thursday.	Calendering and reeling house.	Not known.	1,040
" 12	Birmingham.	3.0 a.m.	Tuesday.	Materials store.	Spontaneous combustion or light thrown down.	480
July 11	Dover.	12.1 p.m.	Wednesday.	Rag store and sorting house.	Started in a rag bin and noticed by hands during dinner hour.	7,000
" 28	Juniper Green.	11.45 p.m.	Saturday.	Paper store.	Not known.	385
Aug. 12	Snodland.	8.0 p.m.	Sunday.	Rope race or engine house.	Oil lamp left burning by workmen engaged resplicing ropes.	106,350
" 20	Glasgow.	6.30 p.m.	Monday.	Stuff room.	Dropped light.	20
Sept. 21	Dartford.	...	Friday.	Pulp store.	Not known.	3,800
Oct. 3	Glasgow.	6.0 p.m.	Wednesday.	Stuff room.	Dropped light.	568
" 4	Glasgow.	2.0 p.m.	Thursday.	Chopped materials and waste paper store.	Spark from furnace.	
Nov. 11	Airdrie.	7.30 a.m.	Sunday.	Steam engine house.	Spontaneous combustion in fluff accumulated about louvre boarding of ventilator.	900

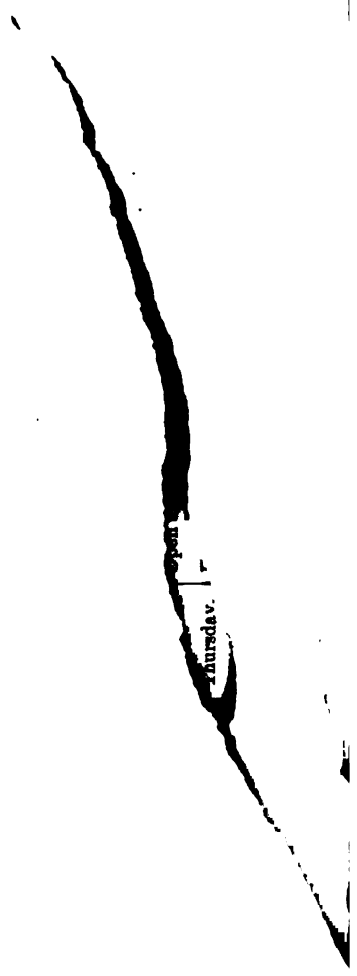
This list must not be regarded as a complete record.

APPENDIX—continued.

Date.	Situation.	Time of Outbreak.	Day of Week.	Part in which Fire originated.	Supposed Cause.	Approximate Amount of Loss.
1904.						£
March 26	Little Eaton.	1.15 a.m.	Saturday.	Stores.	Not known.	1,500
May 13	Chirnside.	Night.	Friday.	Incinerating house.	Ignition of deposit from soda ley during evaporation.	110
June 12	Auchmill.	8.50 a.m.	Sunday.	Engine house.	Lamp igniting ropes.	514
Aug. —	Burnley.	Afternoon.	...	Waste paper stores.	Incendiarism.	3,127
Nov. 12	Inverurie.	11.30 a.m.	Saturday.	Machine house.	Small naked lamp.	22
1905.						
Jan. 16	Pendleton.	1.0 p.m.	Monday.	Engine house.	Overheated bearing.	340
" 28	Airdrie.	...	Saturday.	Paper machine house.	Naked light coming in contact with felt blanket in machine.	25
" 29	Church.	8.0 a.m.	Sunday.	Engine house.	Overheated boiler flue.	113
June 20	Colinton.	3.0 p.m.	Tuesday.	Breaking and beating engine house.	Sparks igniting rubbish in louvers.	12
July 16	Henley-on-Thames.	10.30 p.m.	Sunday.	Warehouse.	Light thrown down.	77
Aug. 14	Kilbagie.	9.0 p.m.	Monday.	Esparto dusting house.	Match on floor.	12,800
15	Birmingham.	2.15 p.m.	Tuesday.	Open shed.	Not known.	90
Sept. 7	Denny.	8.0 p.m.	Thursday.	Engine and dynamo house.	Spontaneous combustion of oily waste.	2,114
" 13	Nottingham.	8.0 p.m.	Wednesday.	...	Light thrown down.	100

Nov. 10	Denny.	6.30 p.m.	Friday.	...	Short circuit in cable to motor; insulation rotted by damp.	19
Nov. 17	Wakefield.	11.45 p.m.	Friday.	Bagging, rags, &c., store.	Vagrant supposed to have got in to sleep on materials.	1,385
1906.						
Jan. 10	Airdrie.	2.30 a.m.	Wednesday.	Rag sorting house.	Not known.	14
April 15	Darwen.	12.45 p.m.	Sunday.	Stores.	Do.	740
May 10	Rishton.	9.30 p.m.	Thursday.	Motor room.	Friction on shaft bearing.	332
June 6	Ballyclare.	4.0 p.m.	Wednesday.	...	Match or smoking.	280
" 7	Glasgow.	6.0 p.m.	Thursday.	Calendering and reeling house.	Not known.	1,040
" 12	Birmingham.	3.0 a.m.	Tuesday.	Materials store.	Spontaneous combustion in light thrown down.	480
July 11	Dover.	12.1 p.m.	Wednesday.	Rag store and sorting house.	Started in a rag bin and noticed by hands during dinner hour.	7,562
" 28	Juniper Green.	11.45 p.m.	Saturday.	Paper store.	Not known.	335
Aug. 12	Shodland.	8.0 p.m.	Sunday.	Rope race or engine house.	Oil lamp left burning by workmen engaged resplicing ropes.	106,350
" 20	Glasgow.	6.30 p.m.	Monday.	Stuff room.	Dropped light.	20
Sept. 21	Dartford.	...	Friday.	Pulp store.	Not known.	3,800
Oct. 3	Glasgow.	6.0 p.m.	Wednesday.	Stuff room.	Dropped light.	598
" 4	Glasgow.	2.0 p.m.	Thursday.	Chopped materials and waste paper store.	Spark from furnace.	
Nov. 11	Airdrie.	7.30 a.m.	Sunday.	Steam engine house.	Spontaneous combustion in fluff accumulated about louvre boarding of ventilator.	900

This list must not be regarded as a complete record.



1948

THE HISTORY AND DEVELOPMENT OF MARINE INSURANCE.

By G. E. MARTINDALE,
Secretary, Thames and Mersey Marine Insurance Company,
Liverpool.

*A Paper read before the Insurance Association of Manchester,
21st November, 1906.*

MARINE Insurance is the senior branch of the various systems of insurance, and yet, in the commercial history of the world, it is essentially a modern growth. In the preamble of a statute dealing with Marine Insurance passed in the reign of Queen Elizabeth, it is spoken of as having existed amongst us "time out of mind," but Park, the earliest writer on the subject in this country, traverses the statement, and gives it as his opinion "that prior to the reign of that princess very few insurances had been effected." However this may be, we may urge that Marine Insurance was not very generally known in the latter part of the sixteenth century; and we may congratulate ourselves on the fact, otherwise we might be the poorer by the loss of one of our great plays, for Shakespeare bases his play of "The Merchant of Venice" on the monetary difficulties of the wealthy merchant Antonio, who had the whole of his fortune at stake in his various argosies, which were all reported to be lost. You will recall Shylock's words: "Yet are his means in supposition: he hath an argosy bound to Tripolis, another to the Indies: I understand, moreover, upon the Rialto he hath a third at Mexico, a fourth for England; and other ventures he hath squandered abroad. But ships are but boards, sailors but men; there be land rats and water rats, water thieves and land thieves, I mean, pirates; and then there is the peril of waters, winds, and rocks;" and when Antonio

had failed to pay the monies due, and his enemy would have his bond, Bassanio, hearing of it, cries:—

“ Have all his ventures failed? What, not one hit?
 From Tripolis, from Mexico, and England,
 From Lisbon, Barbary, and India?
 And not one vessel 'scape the dreadful touch
 Of merchant-marring rocks?”

Had Shakespeare been familiar with the present practice, and had the conditions which prevail to-day been customary at that time, he would not have presumed to harrow our feelings and call forth our sympathy for the sad plight of this good and honourable merchant, for he would have known that Antonio need not have been in such straits. As a wise and prudent man, Antonio would have insured, probably over-insured, and to obtain the required loan he would merely have to deposit his bill of lading and policies of insurance and a substantial sum would have been placed at his disposal, whilst had the tale of disasters proved true he would later have had interesting interviews with his underwriters, and would have emerged therefrom even more wealthy than had his ventures been successful.

THE ORIGIN OF MARINE INSURANCE.

The origin of Marine Insurance is lost in obscurity, and the exact date of its birth and even the peoples who first invented this valuable system are unknown. Much ingenuity has been expended in vain attempts to prove that the Rhodians or the Phœnicians knew and used some form of Marine Insurance, or that it had a Grecian, or at least a Roman source, and could thus boast of aristocratic descent; but nothing conclusive has ever been discovered. With some writers it is a matter of faith, and they hold that certain passages in the classics prove what they wish to believe. Thus the great French writer, Emerigon, considers it undoubted that the Romans knew and practised this kind of insurance, though he admits that the law is silent on the point. None of the passages relied on show that any system had then been elaborated which bears any resemblance to Marine Insurance as we understand it, and we have no direct evidence that it prevailed amongst any commercial community until after the first ten centuries

of our present era. Bottomry, *i.e.*, the mortgage of the hull or bottom of the ship in such a way that the loan and interest are only payable if and when the vessel reaches her destination, whilst if she be lost the lender loses the money he had advanced on her, was indeed known to the Rhodians, whose period of prosperity was some 900 B.C., for a provision of Rhodian law, allowing a special rate of interest on this form of loan, is mentioned in "Justinian's Digest." This form of contract was adopted by the Romans, who incorporated the Roman code with their own legal system, and probably in this contract, so beneficial to commerce, we have the first trace of a custom which by evolution produced the modern system of Marine Insurance.

None of the early compilations of maritime law have any reference to Marine Insurance. The earliest and most important codes extant are the *Consolato del Mare*, said to have originated in Italy and Spain in the 11th or 12th century; the laws of Oleron, compiled in the 12th century; and the laws of Wisby, supposed to have been issued at the close of the 13th century. All these laws are silent on the subject of insurance, but this is not by any means conclusive that insurance did not exist at the date of their publication, being probably due to the fact that they were dealing with matters of navigation, and other matters were, therefore, outside their province.

Whatever view we may hold as to the antiquity of Marine Insurance, it is universally agreed that it was introduced into England by the Lombards. Most modern writers hold that Marine Insurance was invented or re-discovered in Northern Italy probably in the 12th century. At any rate, we know certainly that it was an established practice there early in the 14th century. Whether, as alleged by some, it was introduced there by the Jews on their expulsion from France in 1182, or whether the idea originated entirely with the famous Lombard bankers and merchants, cannot be definitely ascertained. In the 12th and 13th centuries Venice held the proud position of Mistress of the Seas; practically all the banking and over-sea commerce of Europe was in the hands of the Lombard merchants, and when the possibilities and advantages of Marine Insurance became manifest to them they no doubt expanded and developed the system. We cannot even say when it was first introduced into England, but we know that during the

long and fierce wars of the 13th century between the Protestant German States and the Roman Provinces that supported the Papal Throne many of the most wealthy Lombard merchants realised their possession and fled from the ruin and devastation that threatened their country. Some of the refugees gained the Low Countries, and of these some crossed to London. They were not welcomed by the Londoner, who has never taken kindly to alien immigration, but they settled down and immediately began to engage in trade, the majority making their living by lending money at interest, or by usury, as it was then called. In spite of the severities used towards them by Edward III. when he was in need of money to prosecute his French wars, the number of Lombards in this country steadily increased, and they also travelled to Scotland, where they established new industries and trading stations. Because of their religion and the protection granted them by the Pope for that cause, and for acting as his agents, they were preferred in this country to the Jews, and by degrees they ousted that race from its pre-eminence in money matters and obtained control of the banking trade. In their money-lending transactions they found good customers in the Kings of England, and in return for their services their Royal clients gave them special favours. Thus Henry IV. acceded to their request for a writ to the City rulers, ordering them to lease a piece of ground to the Lombards so that they might dwell together in safety instead of living in the places assigned to them in accordance with the old alien laws. The Lord Mayor and Aldermen of London were probably displeased on receiving the writ, and they allotted them some marsh land on the banks of a stream called the Long Bourne, between Bishopsgate and the Thames, but despite the unpromising site, there the Lombards built a double row of fine houses in the Italian style, which has ever since been known and grown famous as Lombard Street. There they carried on their banking and insurance business, and by the end of the 15th century a great part of the foreign trade of England was in their hands. Evidently, too, they had a good name for the way in which they conducted the business of Marine Insurance, for not only did all English policies, and to this day does Lloyd's policy, contain the clause—

“ And it is agreed by us, the insurers, that this writing or policy of assurance shall be of as much force and effect as the surest writing or policy of assurance heretofore made in Lombard Street,”

but it is also found in many Continental policies. From this we may gather that insurance flourished in London, and that in this early time was laid the foundation which ultimately made it the centre of this important branch of commerce.

It is interesting to note how this tribe of Longobards or Lombards have not only given its name—Lombardy—to that fruitful province of Northern Italy where they settled, but that they have also given us the name of our great banking mart and supplied us with the word “lumber” to describe useless goods, a word which also travelled across to America and was used to designate rough undressed timber; while the three golden balls of their coat-of-arms remain a familiar feature of our streets, and still notify us that we can obtain money within for a consideration. We may also notice here, as additional proof of the introduction of Insurance to this country by the Lombards, that the words “policy” and “assurance” are both of Italian origin.

English commerce was begun and fostered by foreigners. Before the Lombards came our export and import trade was almost entirely in the hands of the merchants of the Hanseatic League, known to the citizens of London probably by a corruption of the word “Stapelhof,” i.e., Staple House, as the Merchants of the Steelyard. This famous confederacy of merchants and traders was at the summit of its power in the 14th century, and embraced no less than 80 of the chief towns along the Southern shore of the Baltic as far as the Rhine, the chief of which were Lubeck, Hamburg, and Cologne, Bremen and Bruges, whilst they had important trading stations in London, Bergen, and Novgorod. Their history is full of romance. Coming first to England in the days of the later Saxon Kings, they were amongst us, but not of us, until the reign of Queen Elizabeth, and they possessed enormous privileges. In London land was allotted to them on the left bank of the Thames near where Cannon Street Railway Station now stands, and there they erected and enclosed their huge warehouses. All their affairs were carried on with great exclusiveness, and the inmates lived in complete seclusion. None of them were allowed to marry or even to visit or speak

to any woman, and they were in effect a company of commercial monks. All meals were taken in common, and the inmates had to be indoors by a fixed hour in the evening, when the gates were closed and barred until next morning. The council which regulated the affairs of the community consisted of a master or alderman, two assessors, and nine councilmen, who were elected annually on New-Year's Eve, and installed in office with great solemnity the following day. Owing to the fact that these wealthy traders were ever ready to make loans to the necessitous Kings of England, their rights and privileges became very great. Thus they were under separate jurisdiction, had greater freedom for their shipping, and were free of many of the duties and tolls placed on English commerce. This naturally aroused great jealousy amongst the English merchants, and as native commerce increased and its power grew, riots and attacks upon the Steelyard were frequent, and the stout walls that enclosed its territories had to be strengthened and fortified to withstand the attacks of the prentices and fighting mobs of the city. It would appear as if the history of the Hanseatic settlement in Bergen was almost identical, for there on the German quay still stand the old warehouses with wooden derricks in front, and the walled enclosure is dominated at places by towers, evidently built by the townspeople to overawe them. It is interesting to note that in Bergen one of these old houses is preserved as a Hanseatic Museum, and in it one room is still in existence in its original state, with its quaint "Klevs" or small cupboard-like sleeping-places.

As native English commerce developed, the dislike for the foreigners grew, and many attempts were made to drive them out of London. The merchants of the Steelyard fought strenuously for their position, but the growing body of London merchants engaged in foreign commerce, headed by Sir Thomas Gresham, the Royal agent in Flanders, and founder of the original Royal Exchange, proved too strong for them at last, and in 1597 they finally left London, in accordance with the terms of a Royal proclamation banishing them from this country. It is believed that Marine Insurance was used by the Hanseatic traders, and some incline to think that they introduced the practice into England. But it seems conclusive that these merchants obtained their knowledge of insurance from the Lombards, and from their monastic habits it is at least

doubtful whether they spread this knowledge amongst the English people prior to the arrival of the Lombards themselves, if indeed they had learned its provisions sooner than our own merchants. Indeed, the first record of the issue of a policy at Hamburg is in 1588. After their departure the Lord Mayor was ordered to prepare the "House of the Stilliards" for the "better bestowing and safe custodie of divers provisions of the navy," and it was not until 1863 that the buildings were finally demolished to make way for the South-Eastern Railway. At about the same time as the merchants of the Hanseatic League were banished a great many of the Lombards also left England, though not by the compulsion of the Government. The work of these old traders, so far as our country was concerned, was now accomplished. They had shown us the advantages of commerce and taught us its usages, and from this time England's foreign trade was conducted by Englishmen, though, as we shall have occasion to notice, many of our leading merchants subsequent to this period were aliens who came to settle in this country, and in most cases to become thorough Englishmen themselves.

Prior to the Great Fire of 1666 the business of Marine Insurance was carried on mainly by bankers and money-lenders at their private offices, and in addition to their ordinary business, and there was no concentration of the underwriting interest; but with the establishment of coffee-houses, of which the first appears to have been opened in Cornhill in 1652, a complete change began. As there were practically no newspapers and no buildings open to public resort for trade purposes, the coffee-houses proved convenient rendezvous, and by degrees common affairs and certain kinds of business began to be transacted at them, and they increased in number and became very popular. That which has become world-renowned was opened in Tower Street by Mr. Edward Lloyd, and the first mention of it which has come down to us is in the "London Gazette" of February, 1688. Tower Street was then a busy commercial thoroughfare, and a special haunt of captains and shipowners, and thus

LLOYD'S COFFEE-HOUSE

would probably soon come to be patronised by persons whose business was connected with shipping. In 1691, or the follow-

ing year, Mr. Lloyd removed his establishment to Lombard Street, and soon afterwards, as may be gathered from numerous advertisements appearing in the "London Gazette," it was presumably a well-known place, though there is no evidence to show that it had as yet any special connection with Marine Insurance. The removal to Lombard Street, close to the General Post Office, placed Lloyd's Coffee-House in the centre of the mercantile life of that time, and it was not long before traces are evident that he had secured the patronage of shipowners, for we find numerous advertisements announcing that the sale of ships was to be held there. In 1696 Lloyd began to publish a weekly paper called "Lloyd's News," furnishing commercial and shipping news, and so it is evident that his patrons were persons connected with shipping and over-sea trade. The establishment of this paper is also a proof that Edward Lloyd had great ability and enterprise, for in those days this was a costly business and one that required more than usual tact and skill. There were very severe restrictions on the Press, and publication of any matters affecting the Government and its doings, or dealing with political matters, were forbidden. Macaulay writes very fully of the difficulties attending the publication of a newspaper; gives a humorous description of the "London Gazette" of those days, and concludes by saying that in London the coffee-houses supplied, in some measure, the place of a journal, whither the citizens flocked to hear whether there was any news, just as the Athenians of old flocked to the market-place for that purpose. This paper—copies of all of which, save for the first seven numbers, are preserved in the Bodleian Library—the forerunner of the great shipping paper of the present day, came to a sudden end in February of the following year, after 76 numbers had been issued, owing to a very harmless paragraph referring to proceedings of the House of Lords with regard to silks. Martin says, however, that the cause is thus announced by a semi-official organ:—"Whereas in 'Lloyd's News' it was inserted 'That the House of Lords received a Petition from the Quakers that they may be freed from all Offices,' which being groundless and a mistake he was desired to rectify it in his next: But returned for Answer it was added by the Printer and that he would print no more at present." Of course, it may be that Mr. Lloyd had other

reasons than wounded dignity for his decision, but, at any rate, he kept his word for 30 years. In 1726 it was re-started as "Lloyd's List" in a greatly-improved form, and has continued to the present day, being, save for the "London Gazette," the oldest existing newspaper. By the end of the 17th century Lloyd's Coffee-House was a well-known place. The list of sales and the advertisements requiring information to be sent to, or obtained at, this resort were continually increasing; whilst the growth of sales of ships and cargoes at this house, many of them by order of the Court of Admiralty, shows that his patrons were still mainly connected with the shipping industry. Before long, indeed, the transactions connected with shipping came to predominate over all others, and ultimately Lloyd's Coffee-house became the headquarters of all maritime affairs, including Marine Insurance. We have a further proof that Lloyd's Coffee-House had become by this time well known to the public at large in the fact that it formed the subject of a paper by Steele in the "Tatler" during 1710, and of another by Addison in the "Spectator" during the following year, whilst it is also referred to in the "Wealthy Shopkeeper," a poem published in 1700, in the following terms:—

"Now to Lloyd's coffee-house: he never fails
To read the letters and attend the sales."

When Lloyd's List was re-issued in 1726, it was of the same size and presented great similarity in type and the general arrangement of matter to that of "Lloyd's News"—consisting of a single leaf of two pages about 12 inches long and 7½ broad—and it may be assumed that it was due to Mr. Lloyd that its publication was resumed. The first number known to be in existence is No. 560, for January, 1740, in which year there was a new master of Lloyd's Coffee-House, and, therefore, probably Edward Lloyd was dead. A complete set of this paper from the above number is possessed by Lloyd's, the earlier volumes having been presented to them by the London Assurance Corporation. The receipt of news from various ports gradually increased, and we find many curious and interesting accounts of naval battles and captures of prizes during the war with France and Spain in 1740 to 1745, and again during the period of the Napoleonic wars, during which time the growth of the system of Lloyd's agents had so far extended that news was frequently received by Lloyd's

prior to its reaching the Government. In 1769 there was a struggle for the possession of Lloyd's List, which had become a valuable property, between two sets of the frequenters of the coffee-house. This will be referred to later, and it is sufficient to say here that the more respectable party, who afterwards formed themselves into a society, obtained possession of it in 1770, and it has since remained the great and authoritative paper for shipping news, being, however, in 1884, combined with the "Shipping Gazette," as for various reasons it was found necessary to change the mode of its publication.

Before, however, Lloyd's List had risen phoenix-like from the ashes of "Lloyd's News," the country had become plunged in a wild orgy of speculation. A wave of gambling had spread over Europe; in France it culminated in the Mississippi swindle, in England in the South Sea bubble. During this period there was such a mania for investments that many joint-stock undertakings of the maddest and most impossible kinds were launched, the total capital asked for being probably about five times as much as the current cash of all Europe. Of these schemes, some were connected with insurance, and the shares of such a company floated in Rotterdam rose rapidly to 1,000 per cent., whilst those of a similar company at Gouda attained a premium of 3,000. Very few of the schemes put forward in this country had reference to Marine Insurance, but there were some, for the people were deluded into imagining that the profits made by insurers were fabulous—and it may be remarked that even in this day a modified form of this superstition exists. Two proposals for the flotation of Marine Insurance Companies, which had, however, been thought of previously to the times just spoken of, were introduced to the Houses of Parliament by Lord Onslow and Lord Chetwynd respectively, and despite obstacles and opposition from Lloyd's, the Royal assent was given, and a Charter granted to these two companies in 1720, the King and Government having been won over by the promoters by the offer of a payment of £600,000 into the Exchequer towards the deficit of the Civil List. The chief arguments used by the promoters were that a corporation could write at lower rates than private underwriters, would give greater security, make the business of placing risks easier, and would offer increased facilities for instituting suits. As desired by the promoters,

not only were the companies granted Charters allowing them to insure ships and their merchandise, and to undertake the business of Fire Insurance, but it was forbidden that any other such companies should be formed, and they were granted the exclusive right and monopoly of business as companies. The Charters of Incorporation were issued on June 10, 1720, and under them were started the Royal Exchange Assurance Corporation and the London Assurance Corporation. The monopoly granted was, however, so extraordinary that the Government became alarmed, and inserted in the Act certain clauses which provided that the special privileges might be withdrawn on three months' notice being given and the return of the monies paid as consideration; whilst it was further stipulated that if it was found that the provision made was hurtful or inconvenient to the public the Act might be repealed without notice on the expiration of thirty years.

Owing to the losses suffered by its founders and shareholders by the pricking of the South Sea bubble, the two companies were unable to pay the promised bribe of £300,000 each, and thus their Charters immediately became liable to forfeiture, and the managers of the companies had to petition Parliament, begging to be excused from completing the payments. The influence of their sponsors obtained relief for them, and the amount of the consideration to be paid by each of the companies was reduced by half, which sum was ultimately paid over to the Government in a number of instalments. Although the grant of the Charters had been bitterly opposed by the private underwriters, it proved in sequel to be the greatest protection and benefit to them, for whereas in other countries numerous companies sprang up, the monopoly granted to these two corporations prevented any such competition with Lloyd's. Moreover, although these two companies eventually achieved great success, they were very near shipwreck at the outset, and especially the loss of a fleet of twelve Jamaican ships and other total losses within four months of their establishment, almost bringing about the collapse of the London Assurance Corporation. Consequently, the managers of these companies did not avail themselves to the fullest extent of their joint monopoly, and preferred the safer business, and perhaps that in which they were more skilled, of fire insurance to that of marine underwriting, so that nearly a hundred

years after their foundation it was shown to a Parliamentary Committee they had insured less than 4 per cent. of the marine insurances effected in Great Britain, whilst several merchants stated that though they would much prefer making their insurances with the companies, and would pay a higher premium to them than the risk was supposed to be worth by the underwriters in Lloyd's Coffee-House, yet that, owing to the cautious system of the companies, they were seldom able to deal with them.

Possibly owing to the gambling habit induced by the speculative fever of 1720, a considerable amount of illicit gaming was carried on at Lloyd's Coffee-House, and finally the speculative insurances on the lives of prisoners and sick persons, and on Government securities and the public peace, became a scandal. A scathing reference to this increase of gaming at Lloyd's appeared in the "London Chronicle," the writer of which considered that it was a melancholy proof of the degeneracy of the times, and was perverting the original and useful design of the coffee-house, and the article concluded by saying that "When policies come to be effected on two of the first peers in Britain losing their heads at 10s. 6d. per cent., and on the dissolution of Parliament within one year, at 5 guineas per cent., which are now actually doing and underwritten, chiefly by Scotsmen at the above coffee-house, it is surely high time to interfere."

The principal merchants and underwriters now interposed and gave notice that they would not transact business with brokers who were engaged in such infamous transactions, and as this proved insufficient to stop these proceedings it was decided, in 1769, that the underwriters should form themselves into a society and formulate rules to prevent the inclusion of any person not of good repute. This action produced the struggle already mentioned for the possession of Lloyd's List, which ended in the victory of the better element, and in 1770 the Society of Underwriters and Brokers united under the name of Lloyd's, removed into temporary quarters in Pope's Head Alley, which they named the New Lloyd's Coffee-House. The following year a number of the leading underwriters of this society held a meeting, and each of the 79 present subscribed £100 towards a fund for building a new Lloyd's. Protracted negotiations followed, and at length, in

1773, a proposal put before the committee by one of the most active members at Lloyd's, Mr. John Julius Angerstein, was adopted, and rooms secured in the Royal Exchange, and in 1774 the Association entered their new and permanent home. As far as can be ascertained, the original subscribers were never asked for the sums promised, but a yearly fee of £20 was charged for membership. By slow degrees the number of subscribers increased. Before the end of the year they exceeded one hundred, and ere long the room began to be too small to accommodate the members, and additional apartments had to be secured. This was the first of a series of extensions which have from time to time become necessary, the last of which has only recently been completed and opened.

The society now passed a strict code of rules, and the committee drew up a general form of policy, which was adopted in January, 1779, and the regulations regarding the use of this form having been sanctioned by Parliament, they were immediately put into force. The present form of Lloyd's policy is precisely the same in its wording save that the opening phrase reads "Be it known that," instead of the ancient and pious commencement, "In the name of God, Amen"—this solitary change having been made in 1850.

During the long naval wars which began with the American Secession and lasted for about 40 years, Lloyd's came into great and deserved prominence, and during this period may perhaps be said to have reached its eminence. As soon as it became evident that the struggle which had commenced had become a stern conflict for the supremacy of the seas, it was realised that our shipping would run enormous risks, and shippers and owners of ships alike rushed to have their marine interests covered to their fullest value, and were ready to pay very high premiums to receive adequate protection. As good security was one of the chief requisites of the insurer, and as the premiums continued to rise in face of the combination of all the Naval Powers of Europe against Great Britain, so merchants of the highest standing joined the Society of Lloyd's, and its transactions grew in magnitude. From the evidence of Mr. Angerstein before a Parliamentary Committee, we learn that during these wars Lloyd's gained strength, and from being weak had ended in becoming a very powerful body, able and ready to meet in the promptest manner enormous

financial engagements. It may fairly be said that Lloyd's had now become a power in the State, and even the Government felt it desirable to keep on good terms with an institution of such strength, and which from its organisation could obtain reports of the most important happenings before they reached Whitehall or Westminster. During this time Lloyd's established, in 1803, and managed the Patriotic Fund, to which they subscribed £20,000 from their own assets, whilst the donations of its members were of the greatest liberality. Before the fund was closed nearly £630,000 had been collected from all ranks in the nation, and the conception and management of this fund brought Lloyd's very prominently before the public. Just prior to the war Lloyd's had interested themselves in the foundation of the lifeboat system. Greathead, the inventor, had been advised and helped financially by some of Lloyd's underwriters, and also introduced by them to the Duke of Northumberland. When the Government found itself unable to build and maintain lifeboats at the public expense, that great and noble enterprise was kept going by Lloyd's, until, in 1824, the National Lifeboat Institution was founded under the presidency of the Duke of Northumberland. For these two magnificent works Lloyd's justly earned the respect and admiration of the nation.

As will readily be understood, the fortunes acquired by many underwriters during the war brought about serious rivalry, and towards the end of the 18th century attempts were made to put an end to the monopoly enjoyed by the Royal Exchange and London Assurance Corporations, so as to allow of the formation of other Marine Insurance Companies. One of the first attempts to break down this monopoly was made in 1798 by the directors of the Globe Fire and Life Insurance Company, who wished to add a Marine Department to their business. The petition which they presented to Parliament did not arouse so great antagonism from the two favoured companies as from Lloyd's, who, having made friends and auxiliaries of these companies, whose privileges had proved of the greatest benefit to Lloyd's by keeping rivals out of the field, desired to retain the *status quo*. Lloyd's used its influence to such good effect that the petition did not even get a hearing; and, although in 1806 the Government promised to support the application if the Globe Company would undertake

to repay the consideration money, the return of which was obligatory if the privileges of the two chartered companies were to be withdrawn, and this was readily agreed to, failure again resulted. Subsequently a powerful organisation of wealthy London merchants made a determined attempt to obtain leave to start a new joint-stock company to carry on the business of Marine Insurance, and in 1809 they made application to Parliament for the necessary permission. Lloyd's were stirred to great exertions by this application, knowing the strength and influence of the promoters, and they appointed a strong committee to oppose every application that might be made. The motion of the promoters was presented to the House by Mr. Manning, M.P. for the City, and its rejection was moved by Mr. Joseph Marryat, the member for Sandwich, who held a prominent position in the commercial world, and was himself a well-known underwriter at Lloyd's. Mr. Marryat's speech was very interesting and particularly able, but in spite of it a Select Committee was appointed to investigate the whole question of the state and means of effecting Marine Insurance, and to consider the particular Act of George I. which granted the charters to the Royal Exchange and London Assurance Corporations.

It may interest you if I read here, from his speech to the Commons, Mr. Marryat's excellent description of the requirements and duties of brokers and underwriters. He said:—

“ I am aware that the occupations of an insurance broker and underwriter are generally considered as demanding but very superficial attainments; but a candid investigation of the subject will prove this idea to be erroneous. An insurance broker can only qualify himself for his business by considerable study and application. He must learn how to fill up policies of every description, with all the various clauses adapted to every possible circumstance. He must be able to make accurate declarations of interest, so as to cover the parties in case of loss, and yet not expose them to the payment of any unnecessary premium in case of arrival. He must know how to make up complex statements of average and partial losses on every species of merchandise, and on the various principles applicable to every different case. He must be

informed of the current rates of premium on every voyage, in order that he may be enabled to transact the business entrusted to him to the best advantage; and he must be well acquainted with the character of the different underwriters to guide him in the selection of names he takes upon his policies. Then as to the underwriter, he must possess every species of knowledge requisite for the broker—except, indeed, as to the solidity of his brother underwriters—it being his province to examine all papers and statements laid before him by the broker. In addition to this he must be well versed in geography, must be informed of the safety or danger of every port and roadstead in every part of the world; of the nature of the navigation to and from every country; and of the proper season for undertaking different voyages. He also should be acquainted, not only with the state, but the stations of the naval force of his own country and of the enemy; he should watch the appearance of any change in the relations of all foreign Powers by which his interests may be affected; and, in short, he has constantly to devote his mind and give much time and attention to the pursuit on which he is engaged. Those who commence underwriting without the necessary qualifications, or continue underwriting without the necessary caution, generally soon find their error in their own ruin, and the injury of those with whom they are connected.”

The Parliamentary Committee appointed did their work thoroughly. Amongst the numerous witnesses examined was Mr. Angerstein, at that time 75 years of age, and known as the “Father of Lloyd’s,” who gave very interesting evidence as to the small amount lost by the insolvency of members at Lloyd’s, the liberality of the underwriters in dealing with claims, and the ability of Lloyd’s to cover all that was required, even on the largest and most valuable vessels. From statistics before them the Committee discovered that the business effected was little more than half the amount that might have been placed, and for this and other reasons advised that the monopoly charters should be repealed. The House of Com-

mons, however, this time supported Mr. Marryat, because the House considered that the system of intelligence at Lloyd's was of the utmost importance to the mercantile world, and the resolutions of the Select Committee were rejected.

Lloyd's had thus won a great victory, but with prudence and foresight they resolved to correct the defects in their body which had been disclosed at the enquiry. In 1811 a meeting was called, and on the motion of Mr. Marryat a committee was appointed to consider what measures were necessary for the future good management of their affairs. Amongst the recommendations of this committee were more stringent enactments as to membership, alterations in the election and duties of the committee of management, the appointment of a secretary, and the decision to appoint Lloyd's agents; all of which were approved by the society and duly carried out.

The failure to obtain the repeal of the monopoly of the two chartered companies despite the efforts of so many of the chief merchants of the city warded off any other attacks for some years, but in 1824 the repeal was brought about on the initiative of one man. It has already been noticed that many of our leading merchants, often the most prominent in matters of reform and progress, were foreigners or of foreign descent. Thus, for example, the founders of the Patriotic Fund and the recognised leaders of Lloyd's during the Napoleonic wars were John Julius Angerstein, who was born in St. Petersburg of German parents, and Sir Francis Baring, who, though born in England, was the son of a German who came to this country from Bremen. The change in the law relating to Marine Insurance Companies was likewise brought about by an alien, a man of great and outstanding abilities, a German Jew from Frankfort—Nathan Meyer Rothschild. It will be interesting to you to know that when young Rothschild came to England in 1798 at the age of twenty-one, he selected Manchester as the place in which he hoped to make his fortune. His capital was said to be but £80, and with this he opened business as a money-lender. His success was so great that in five years he had accumulated £200,000, when he removed to London, and by his cleverness and skill quickly became the leading broker of the Stock Exchange and established the colossal fortunes of his house. It is a tradition

that Rothschild's decisive campaign against the monopoly was entered upon because a relative, Benjamin Gompertz, who was a distinguished mathematician, had been refused the actuaryship of an insurance company on account of his religion, although he was recognised as the most fitting applicant for the post. Incensed at this insult to his race and religion, he promised Gompertz that he would make him actuary of a bigger company. In a surprisingly short time he got a number of his friends to form "The Alliance Fire and Life Assurance Company," and as soon as the prospectus was issued applied to Parliament for the repeal of that part of the Act of George I. granting a monopoly to the two chartered companies, so that Marine Insurance could be added to the other two branches of his company. The Bill being strongly supported by Rothschild's friends and finding favour with the Government, it was duly passed, despite considerable opposition. Lloyd's being persuaded that the establishment of more companies would be their ruin, made a last attempt to stop the underwriting of Marine Insurance by this new company. An underwriter of the society took shares in the new venture, and when Rothschild proposed to add Marine Insurance as a third branch of the Alliance Company's business, he protested that this was a breach of their contract with their subscribers, took the matter to the Courts, and won. But Rothschild, like Napoleon, did not recognise defeat; he simply allowed the company already founded to go on with its fire and life business, and established the Alliance Marine Insurance Company, with a separate capital, and the two companies, nominally independent, worked together in this dual form until last year, when the two separate capital stocks were consolidated, and the twin companies became one.

The repeal of the monopoly did not lead to the sudden formation of numerous Marine Insurance Companies, only one other, "The Indemnity Marine Insurance Company," being established that same year. In the following dozen years five other Marine Companies were floated, but their careers were unfortunate, and all soon ceased to transact business. Then, of the companies still in existence, we find the Marine Insurance Company, founded in 1836, the Ocean in 1859, the Thames and Mersey, and the London and Provincial in 1860, the British and Foreign, the Union, and the Commercial Union

in 1863, and the Maritime in 1864, and others have been established in more recent times. But it must be remembered that during these forty years about one hundred other Marine Companies were floated, which, struggling for existence for a shorter or longer time, had all eventually to be wound up. Generally speaking, we may say that whenever there has been a cycle of good and prosperous years subscribers are found in sufficient numbers to float another company, in the hope that they may secure a share of the profits recorded or imagined, and it is sad to relate how seldom these hopes are realised.

We must now glance briefly at the present constitution of Lloyd's, for the fears of its members proved vain, and the society was not ruined by the formation of the various companies, but Lloyd's still flourishes, its underwriters securing a moiety of the insurances placed in this country, and taking probably, in the course of each year, some three-and-a-half millions in premiums.

The old constitution requiring improvement, Lloyd's applied for and obtained a Charter of Incorporation in 1871.

The constitution of Lloyd's is frequently misunderstood by the general public. Some think that Lloyd's are underwriters in their corporate capacity, but it must be clearly understood that Lloyd's is in the first place merely an association of underwriters, each of whom conducts his business according to his own views and on his own responsibility, and his capital is alone at stake for the protection of the risks underwritten. In its corporate capacity Lloyd's conducts the affairs of the society in accordance with the terms of the above-mentioned charter, and carries out the regulations imposed from time to time at the general meetings of its members, details of which need not be specified here. In the above-mentioned charter the objects of the society are stated as:—

1. The carrying on of the business of Marine Insurance by members of the society.
2. The protection of the interests of members of the society in respect of shipping and cargoes and freight.
3. The collection, publication, and diffusion of intelligence and information with respect to shipping.

The rules and regulations of the society were overhauled,

modernised, and improved, the terms of subscription and fees increased, in the interests of efficiency, and at a later period a minimum deposit of £5,000 was required from each underwriter, to safeguard in some degree the interests of his clients. At the present time there are more than 700 underwriting members, as well as many non-underwriting or honorary members, in addition to which most of the companies, the daily press, and others, subscribe to the intelligence department. Perhaps I might mention here that there are also underwriters' rooms at Liverpool and Glasgow which, at first, had underwriting members, and which act in many ways in the interests of underwriters, and that London, Liverpool, and Glasgow each possess a Salvage Association which assists underwriters, shipowners, and others in the operations necessary when a vessel has met with any disaster, and of the usefulness of all of which associations it is needless to speak.

There is not time to refer to all the work done in collecting and disseminating news relative to shipping matters, nor to speak of Lloyd's Registry of British and Foreign Shipping, with its wonderful system of surveying and classifying all ships that come to it, which, however, is distinct from Lloyd's; neither have I time to describe Lloyd's Index or its Captains' Register or its Enquiry Office, nor to dilate on the romance of the *Lutine* frigate and detail the origin of the bell rung to announce the arrival of overdue vessels or of the handsome table and chair which adorn the library; but it is sufficient to say that Lloyd's has made its mark on British commercial history, and even if the members of Lloyd's ceased underwriting, its work and place in the commercial life of this country, nay, of all the world, would still remain. So we may believe that "Lloyd's" will continue in existence, and the name of the old "coffee-man" retain its world-wide fame.

Now that we have discussed the growth of the means by which Marine Insurance could be placed, we must trace the progress of the growth of the laws by which it is governed. The law of Marine Insurance developed more rapidly on the Continent than in England, and from the 15th century onwards a number of ordinances and codes were compiled and promulgated giving and enforcing the various usages that had developed. Of these, as important for various reasons, we

may cite the laws issued in Florence and Venice from 1400 onwards, the Ordinances of Barcelona 1434 to 1484, La Guidon de la Mer, Rouen 1556 to 1584, and the Ordonnance de la Marine, France, 1681. The earlier of these enactments are interesting from their age of nearly five centuries, and because they show what were considered the essential features of the contract, and enable us to trace its development. The Guidon de la Mer is a very complete exposition of the practice of that day. The first extant English policy, written in 1613, almost exactly resembles the form given in this code, and is for the most part in accord with Lloyd's policy of the present day. The French law of Marine Insurance was codified by the Ordonnance de la Marine, the work being undertaken and completed under the direction of Colbert, a man of Scottish descent and the famous Minister of Louis XIV. So complete was this code and so great its authority that it was largely adopted in the codification of French law made by order of the first Napoleon, 1808, and this in its turn has been the model on which all the modern codes have been formed.

England never attempted a codification of its laws of commerce as did the Continental States, and until Lord Mansfield's time our judges do not seem to have paid much attention to the subject. The first reported case was one tried before Lord Chief Justice Wray, in 1589. A policy was effected in London on a ship bound from Melcombe Regis, in Dorsetshire, to Abbeville, in France, and the plaintiff asserted that the ship, when proceeding up the River Soane towards Abbeville, was arrested by the King of France. The Court was so little acquainted with the nature of the contract of Marine Insurance that they had first to argue the elementary question as to where the action should be tried, the defence urging that as the issue arose out of his realm the case could not be adjudicated upon in London. The judge, however, decided that he had jurisdiction, the case proceeded, and the plaintiff obtained the verdict.

The first law relating to Marine Insurance to be placed on the English Statute Book was one entitled "An Act concerning matters of Assurance amongst Merchantes," passed in 1601, its object being to establish a special court for the trial of Marine Insurance causes in London. It is in the preamble to this Act that we find the statement already mentioned, that

“Whereas it has bene tyme out of mynde an usage amongste merchantes both of this realme and of forraine nacyons . . . to have . . . assurance made of their goodes, merchandizes, ships, and things adventured”; and here also we have a clear recital of the benefit to be obtained by such insurance —“by means of whiche policie of assurance it comethe to passe that upon the losse or perishinge of any shippe there followethe not the undoinge of any man, but the losse lightethe rather easilie upon many than heavilie upon fewe, and rather upon them that adventure not than those that doe adventure, whereby all merchantes, speciallie the younger sorte, are allured to venture more willinglie and more freely”—which can hardly be improved upon. The court thus established does not appear to have done much work, partly, probably, from its constitution, and by reason of the restriction of its jurisdiction and the cases it might concern itself with, and also in part because its decision did not prevent the case being re-opened at common law; and by the end of the 17th century it had fallen into disuse, though the Act was not expressly repealed until 1863. In 1745, the Marine Insurance Act, to prohibit wagering policies and re-insurances, was passed. The first of these points was dealt with again a century later, in 1845, in the Gaming Act, which makes void all contracts by way of gaming or wagering, and the latter in 1864, when re-insurance was again legalised.

On Lord Mansfield being raised to the Chief Justiceship in 1756, the principles of English insurance law were first seriously studied. This eminent judge devoted himself to the consideration of this subject, and in a series of judicial decisions laid the foundations and basis of a system of Marine Insurance. On the suggestion of Mr. Justice Blackstone, a barrister named Park collected the whole series of the decisions recorded up to 1780, and published his book entitled “A System of the Law of Marine Insurance,” in 1787, this being the earliest of our standard works on the subject, the literature of which has since become so great.

Other important Acts dealing with this branch of commerce are as follows:—

The Marine Insurance Act of 1788, requiring the name of the assured to be inserted in the policy;

The Policy of Marine Insurance Act of 1868, providing

for the assignment of policies, and enabling the assignee to sue thereon in his own name;

The Stamp Act of 1891, which lays down certain conditions relative to the contract, and declares that no policy shall be valid unless duly stamped; and

The Finance Act of 1901, which makes provision as to the continuation of policies beyond a period of twelve months;

and to these it is hoped may be added this year the Codification of Marine Insurance Law, for the Marine Insurance Bill first introduced to Parliament in 1894 has now been approved by both Houses, and only awaits the consideration of some amendments introduced in the Commons, to be ready for the Royal assent.

It has often been said that the genius of the English people does not run in the direction of the codification of law, and certain it is that, at least until quite recently, we have never followed the example of our Continental neighbours in this matter. This is the more remarkable when we consider that both Lord Bacon and Bentham advised that codification ought to be undertaken. Our earliest experiment in the direction was in 1882, in the Bills of Exchange Act, and we have since had the Partnership Act of 1890, and the Sale of Goods Act of 1893, whilst we have now completed the codification of Marine Insurance Law. The necessity for this code is chiefly twofold—that the ordinary man of business may readily ascertain his rights, and that in the growth of international trading we may not discourage the foreigner, and so handicap ourselves in our dealings with him. The advantages of codification have been pointed out by many eminent lawyers since Bacon. Sir Frederick Pollock urges that by this means we secure completeness and consistency, and remarks that “case law is intelligible and accessible only to experts, and to them only with an expenditure of thought and labour often utterly disproportionate to the end in view.” On the other hand, when addressing the Average Adjusters’ Association last May, Mr. Justice Kennedy pointed out that “the results of codification are likely to be of least practical value, and to require most frequent revision, where the branch of law to which the codification is applied is highly technical, and deals with subject matter consisting of transactions the course and the nature of

which is constantly being modified by changing circumstances in the world of commerce, and wherein the conduct of business, even the simplest, must almost invariably be entrusted to experts;" and he considers that this applies to the coding of the law of Marine Insurance, since "its subject matter is business of a technical kind directed by trained specialists, and its problems are being constantly evolved out of new conditions of commercial industry—conditions which are ever growing in complication." Mr. Justice Kennedy readily allows, however, that "it is a gain to have the general principles of the law of Marine Insurance stated authoritatively in a compendious form," only he urges that we should "not entertain a false or exaggerated notion of the value of such codification." Whilst we must recognise the force of these observations on this code, we may also believe that it will prove of great advantage, and that it will be welcomed by all commercial and legal communities.

The history and development of Marine Insurance have now been traced, though necessarily in a brief and hasty fashion, and there remains only to consider what are its benefits.

The cardinal principle of insurance is the division and distribution of liability. All insurance aims at producing a state of security. The security which Marine Insurance seeks to bring about is not the safety of the thing insured—though incidentally it does help in this direction—for loss and disaster will inevitably occur to vessels and their cargoes during their voyages over the vast waters with their varied perils. The security attained is that of the adventurer, who by the transfer of his liability from specified risks is relieved from fear of loss and its attendant anxieties, even to his complete undoing.

Marine Insurance differs from wagering or gambling in that it is concerned with real values, and demands full disclosure of every material fact that is known or ought to be known to the assured. It is a contract of the utmost good faith, and is also a contract of indemnity. The primary meaning of this latter phrase is that the person insuring must really have something at risk and is to be reimbursed the actual loss he suffers.

I may again remind you that Marine Insurance was the first system of insurance to be discovered or invented—fire insurance

coming into existence in 1667, the year after the Great Fire of London, and life insurance not being adopted until the beginning of the 18th century. The earlier rise of Marine Insurance is consequent on the fact that the necessity of protection from the perils consequent on shipping was the first to force itself upon the notice of the commercial world. Its evolution we have briefly traced, its history is coincident with that of modern English commerce, and I trust that you have found that it possesses the romantic interest which I venture to claim for it. I believe that the history of any branch of commerce, or the life of any of our great merchant princes, is full of pure romance, and it is good for us that occasionally we should turn from the detail and drudgery of our daily avocations to glance at the past and trace the growth of some branch of our trade, noting how from small beginnings it has steadily progressed, checked occasionally by difficulties and perils, but surmounting every obstacle and pressing on to yet greater developments and wider spheres of influence; so that with the glamour of these great happenings about us, we may return to our duties and common tasks refreshed, re-invigorated, and encouraged.

THE FEDERATION OF INSURANCE INSTITUTES OF GREAT BRITAIN AND IRELAND.

EXAMINATION PAPERS—1907.

FIRE BRANCH.

PART I., SUBJECT A.—POLICY DRAFTING AND ENDORSEMENTS.

(HOSIERY—ENGLAND AND WALES.)

Two hours allowed for this paper.

The use of the Tariff is permitted. Printed Warranties and Scale of Allowances must be used. The Warranties and Scale of Allowances need not be attached to the Draft, it being sufficient if the date of the issue used be referred to.

Draft a policy from the aftermentioned particulars and calculate the annual premium, showing the rates in detail:—

DESCRIPTION FROM SURVEYOR'S REPORT.

Messrs. THOMAS, WILLIAMS & COMPANY, of Castle Mills, King Street, Leicester, Hosiery Manufacturers.

No. on Plan.	Height.		
1	Partly 3 storeys and partly 4 storeys and basement.	Base-ment.	The ceiling of which is exactly 3 feet above the lowest point of the land level, made-up stock room.
		Ground.	Knitting-room and store for cases and skips.
		Second.	Mending, ironing, finishing, and tying-up rooms, containing electric irons and power sewing machines.
		Third.	Warehouse, and for sewing and seaming.
		Fourth.	Stock-room, and for making-up, knitting, and linking.

No. on Plan.	Height.		
			<p>The walls of the building are partly wood-lined. An external iron staircase gives access to the upper floors. A hoist entirely enclosed with brickwork, with an opening to each floor, passes through the building. Heated by low-pressure hot-water apparatus.</p>
2	1 storey.	...	Steam boiler and engine-house, partly timber-built. (Rate, 5s. per cent.)
3	4 storeys & basement.	Basement.	The ceiling of which is 6 feet above the lowest point of land level, is bricked-up and unoccupied.
		Ground.	Warehouse, making-up and packing room, and offices. Wood dado, 8 feet in height, in the offices.
		Second.	Power winding room.
		Third.	Examining, mending, ironing, and machine rooms, containing a few electric irons and two gas stoves for heating irons, and 25 power sewing machines.
		Fourth.	Store for wrapping paper, stationery, and lumber.
			<p>Internal timber staircase and hoist. Heated throughout (except the offices, in which there are ordinary fireplaces) by low-pressure hot water apparatus, the furnace for heating the same having 6 feet of smoke-pipe.</p>
4	2 storeys.	Ground.	Pressshop, containing three steam-heated presses, and for brushing by teasles.
			(N.B.—Brushing is not a process of manufacture.)
		Second.	Cardboard box making. A printing-press for Assured's own work therein.
5	1 storey and loft.	Ground.	Warehouse for finished stock and yarns.
		Loft.	Store for skips, boxes, and spools, and for knitting by power.
			<p>The building is partly timber-built and the ceiling of the ground floor is wood-lined. Communication between the floors by internal timber stair.</p>

The aforesaid buildings are all brick or stone and slated or tiled, except as otherwise stated, lighted by incandescent electric light, and in the Insured's sole tenure.

Insurances in other Offices allowed.

Xmas. 1906 to Xmas. 1907.

SUMS INSURED.

	No. 1 on Plan.	No. 2 on Plan.	No. 3 on Plan.	No. 4 on Plan.	No. 5 on Plan.
Building, ...	£2,000	£100	£2,500	£500	£250
Steam Pipes, &c., ...	200	—	—	—	—
Steam Boiler, ...	—	200	—	—	—
Steam Engine, ...	—	350	—	—	—
Machinery, ...	6,000	—	—	—	100
Gearing, ...	300	—	—	—	—
Stock-in-trade ...	3,000	—	6,650	950	850
	£11,500	£850	£9,150	£1,450	£1,200
Total, ...	£23,950				

At Lady Day, 1907, the Insured advise the following alterations:—

Brushing by machinery other than by teasles is now done in the ground floor of No. 4 on plan.

In the upper floor of No. 5 knitting by power has been discontinued and winding by hand is now done therein.

Draft endorsement giving effect to these alterations.

FIRE BRANCH.

PART I., SUBJECT A.—POLICY DRAFTING AND ENDORSEMENTS.

(OIL MILLS—SCOTLAND.)

Two hours allowed for this paper.

The use of the Tariff is permitted. Printed Warranties and Scale of Allowances must be used. The Warranties and Scale of Allowances need not be attached to the Draft, it being sufficient if the date of the issue used be referred to.

Draft policy from the following Surveyor's Report and Schedule of Amounts, shewing rates, gross premium, discounts, and net premium. Term: One year from 25th December, 1906, to Christmas, 1907.

SURVEYORS' REPORT.

THE UNITED OIL AND CAKE MILLS, LIMITED, St. Vincent Mills,
Gordontown, N.B.

RATE.	PLAN No.	HEIGHT.		DESCRIPTION.
12/3	1	4 storeys and attic.	1st 2nd, 3rd, and 4th	Occupied as cake store, containing three cake breakers, a disintegrator, a set of horizontal stones for crushing cake, and a 12-horse-power electro motor. Wholly as warehouse for linseed, having an open wooden stair, and an elevator passing through each floor. There is an endless band conveyor in attic floor, also a timber erection on roof enclosing the elevator heads. Adjoins the Seed Mill No. 2 on plan, but is separated therefrom by an entire party wall through and above the roof; with no internal communication. The seed is conveyed to No. 2 on plan by external iron screws.
Nor. - 21/- Def. Con. 2/6 Stone - 1/- <u>24/6</u>	2	2 storeys.	1st 2nd	Linseed crushing and oil expressing by machinery, containing three sets of rollers, one pair of horizontal stones, two pairs of vertical stones, such vertical stones being used solely for crushing cake parings; three steam-heated kettles, and two cake paring machines. Hopper floor. Timber louver boards in roof ventilator.
5/-	3	1 storey.	...	Detached from Mills Nos. 2 and 8 on plan. Steam boiler house and firing place.
5/-	4	1 storey.	..	Detached from Mills Nos. 2 and 8 on plan, but adjoining No. 3 on plan. Steam engine house. Walls timber-lined.
12/3	5	1 storey.	...	Adjoining but having a perfect party wall without openings to No. 2 on plan. Hydraulic pump and accumulator house.
10/6	6	1 storey.	...	Detached from mills. Linseed oil filtering house.

RATE.	PLAN No.	HEIGHT.		DESCRIPTION.
10/6	7	3 storeys and attic.	...	Detached at least 20 feet from Mills Nos. 2 and 8 on plan. Wholly occupied as warehouse for cotton seed and cake, two cake breakers and a pair of horizontal stones for reducing cake to meal, also a 15-horse-power electromotor. An open wood stair and timber elevator through each floor. Seed conveyed to the Mill No. 8 on plan by external iron screws.
Nor - 10/6 Rollers 1/- Cotton Seed 2/6 14/-	8	1 storey.	...	Of standard fire-resisting construction. Cotton seed crushing and oil expressing by machinery, containing four sets of rollers, two vertical stones for crushing cake parings only, three steam-heated kettles, two cake paring machines, oil presses and pumps. The cotton seed has not more than 2 per cent. in weight of fibre attached.
10,6	9	1 storey.	...	Cotton seed oil refining house (steam heat), detached.
5.-	10	2 storeys.	...	Offices (heated by common fires), detached.

Said buildings are all stone or brick built and slated except as stated, lighted by electricity (town's supply), and heated by steam except as stated. In sole tenure of the Insured.

FIRE EXTINGUISHING APPLIANCES.—Fire plugs in yard supplied with water from town's main; water-pressure and hose sufficient to command the whole premises. Allow 5 per cent. discount.

SCHEDULE OF AMOUNTS.

No. on Plan.	Building.	Machinery.	Stock.	Steam, &c., Engines.	Boilers.	Rent.
1 ...	£5,000	£300	£10,000	—	—	£150
2 ...	1,000	3,000	100	—	—	50
3 ...	200	—	—	—	£400	50
4 ...	300	—	—	£1,000	—	50
5 ...	150	200	25	—	—	25
6 ...	100	500	50	—	—	50
7 ...	4,000	200	8,000	—	—	100
8 ...	2,000	4,000	150	—	—	250
9 ...	200	350	100	—	—	50
10 ...	500	200	—	—	—	100

ENDORSEMENT.—Endorse policy, giving effect to the following:—No. 10 on plan, offices, now heated by low-pressure hot-water pipes; boiler and furnace outside.

FIRE BRANCH.**PART I., SUBJECT B.—RE-INSURANCES.***One-and-a-half hours allowed for this paper.***QUESTIONS.**

	<i>Marks.</i>
1. What do you understand by an "interim" acceptance by guarantee?	10
2. What is a sub-guarantee, and what course should precede the same being granted?	10
3. State fully how an error or omission in describing a risk affects a guarantee	10
4. State fully the regulation respecting the time for delivery of a copy of the policy after the acceptance of a guarantee	10
5. Give the rule relative to—(A) the renewal of guarantees after annual policies; (B) the renewal of guarantees after short-period policies	15
6. When does the liability of a guaranteeing Office commence?	10
7. What notices relating to a guarantee may validly be given verbally, and what must be included in written notices?	10
8. What do you understand by the difference in the terms "Re-Insurance," "Guarantee"?	10
9. What is the foundation of a guarantee?	10
10. What are the conditions consequent upon the issue of guarantee acceptances by a branch official without any restrictions, and in what manner do these conditions differ from those applying to an "interim" acceptance?	15
11. Give the wording of a correct guarantee request, and state what is meant by "an uniform rateable share of the sum assured"	15
12. Give the rule with respect to the furnishing of the quarterly renewal lists	12

FIRE BRANCH.**PART I., SUBJECT C.—GENERAL RULES FOR THE REGULATION OF FIRE INSURANCE BUSINESS.***One-and-a-half hours allowed for this paper.***QUESTIONS.**

	<i>Mark</i>
1. What section or sections should be referred to in connection with tariff insurances unprovided for in particular tariffs?	10

	Marks.
2. What section or sections should be referred to in connection with non-tariff insurances?	10
3. What course must be pursued where an acetylene gas generating apparatus in a private residence does not accord with the rules?	15
4. What is necessary where electro-motors in a mill (the total rate of which for other machinery is 22/- per cent. per annum) are required to be insured against loss caused by self-ignition?... ..	25
5. The value of stock in a building during a year varies as follows:—	
1st January to 31st March, ... £2,000;	
1st April to 31st May, £4,000;	
1st June to 30th September,... £1,000;	
1st October to 31st December, £5,000.	
What method of charging is expressly laid down in such cases for an annual policy?	20
6. In order that a "pro rata" proportion of the annual premium may be charged, what must be included in an insurance on contents of buildings (except property belonging to public bodies) dating from Lady Day, where, in order to secure concurrency with other policies effected by the same insured, it is desired that the date of expiry shall be the following Christmas?	25
7. May a specified sum of an insurance on the contents of a private residence cover any of the insured property while temporarily removed to any of the following:—a bank, club, hotel, public laundry, lodging-house?	15
8. How is it possible to cover property of an insured's visitors?	10
9. What provision is made in the rules for the inclusion in a policy on household goods of the property of an insured's servants?	15
10. From what provisions of a tariff does the special rating of a risk under a tariff exempt it?	20
11. Where the only separations between the storeys of a tariff-rated building are the wooden floors—there being no ceilings—and it is necessary to cover the under sides of the floors with canvas, what provision, in fixing the canvas, is necessary to obviate the additional rate for ceilings?	20
12. Describe a party wall	15

FIRE BRANCH.

PART II., SUBJECT A.—KNOWLEDGE OF TARIFFS
(COLD STORAGE WAREHOUSES).*One-and-a-half hours allowed for this paper.*

QUESTIONS.

- | | <i>Marks.</i> |
|---|---------------|
| 1. State (A) to what buildings the tariff applies, (B) what buildings are excluded from the operation of the tariff? | 20 |
| 2. What items of the specification are subject (A) to average, (B) to marine clause? | 20 |
| 3. Under what conditions may a building and the insulating material, wood linings, and partitions therein be insured in one sum? | 15 |
| 4. Give the rule for rating floating insurances over specified stores (A) forming part of the same premises, (B) not forming part of the same premises | 30 |
| 5. What buildings are excluded from the range of the United Kingdom floating policy form provided by the tariff, and in what way is it permissible to alter the wording of the form? | 15 |
| 6. In what manner is it indicated to the insured that a policy issued in accordance with this tariff on merchandise covers more than ordinary fire damage? | 20 |
| 7. State the extra charge (A) for defective construction, (B) for use of ether | 20 |
| 8. Rate the following items:—
Building;
Insulating materials, wood linings, and partitions;
Engine and refrigerating plant;
Lard and butter on the first, second, third, and fourth floors;
Bacon and hams on the first, second, third, and fourth floors;
Butter on the fifth floor;
—of and in the building described below:—
Building b. b. and s., five floors in height, floors non-fireproof, occupied as follows: first, second, third, and fourth floors cold storage chambers, cold air circulated therein by fans, the power for these and for the refrigerating apparatus (ammonia | |

Marks.

process) on first floor being obtained from a steam engine on said first floor, steam brought from a boiler outside at a distance. Said cold chambers are insulated with timber, charcoal-packed. The fifth floor is used for ordinary (non-refrigerated) storage only. Cubical contents of the building, 350,000 feet.

Details should be given showing how the rates are arrived at 60

FIRE BRANCH.

PART II., SUBJECT A.—KNOWLEDGE OF TARIFFS (HOSIERY—ENGLAND AND WALES).

One-and-a-half hours allowed for this paper.

QUESTIONS.

1. State the rules as to average under this tariff, with any exception or exceptions 20
2. Give in detail the tariff rate for a brick and slated factory forming the three top floors of a building of five storeys in height, the two bottom floors being occupied by a wholesale stationer as paper warehouse. The factory has bare brick walls and plaster ceilings throughout, access to the different floors being by internal wood stair and hoist. Heating by low-pressure hot water; lighting by incandescent electric light. Gas-engine securely erected on concrete bed for driving the usual knitting, linking, warping, and sewing machines, there being more than 50 of the latter. Brushing or raising by machinery other than teazles is done, and goods which have undergone this latter process are ironed with gas-heated irons 30
3. Communicating with the factory described in Question 2 is a warehouse of two storeys, conforming to all the tariff requirements except that it is wood-lined throughout and has wood stairs between the floors. What would be the rate for this warehouse? ... 15
- 4A. Communication between the factory and warehouse described in Questions 2 and 3 being necessary, what suggestion would you make to the insured as to the most economical method of reducing the warehouse rate? 15

Marks.

- 4B. Assuming the value of stock in said warehouse to be £6,000, what annual saving in the premium would the carrying out of the suggested alteration effect, and what, in detail, would be the warehouse rate? 20
- 5 What are the extras for the following?—
In warehouses—(A) Gas trim stove. (B) Electro motor not in accordance with rules. (C) Cardboard box-making 20
6. What are the extras for the following?—
Factories—(A) Oil engine. (B) Linking by power 20
7. Quote any special warranty to be inserted in every policy on a factory under this tariff 10
8. A building is occupied partly as a hosiery warehouse and partly as a lace warehouse, by different tenants; quote the rule for fixing the correct rate 15
9. What is the lowest net rate possible for a warehouse, provided the insurance is not subject to average?... 15
10. A factory of five storeys in height is wholly of fireproof construction except the top storey, which has a fireproof floor but a non-fireproof wood-lined roof. Said top storey is occupied for sewing, linking, warping, winding, and knitting, by power, and otherwise conforms to all the tariff warranties. Give the rate for the top floor in detail 20

FIRE BRANCH.

PART II., SUBJECT A.—KNOWLEDGE OF TARIFFS
(OIL MILLS—SCOTLAND).*Two hours allowed for this paper.*

QUESTIONS.

1. (A) What is the date of the present tariff? (B) To what buildings does it apply? (C) What buildings does it specifically exclude? 10
2. Detail the different sections in the tariff. Name classes of insurance in which the average clause is required, and state the annual normal rates for non-fireproof and fireproof buildings and sheds of ground floor only 15
3. What is the remuneration paid to agents, and how is it calculated? 5
4. What is the extra charge for defective construction as defined in the general rules, and what height is allowed for storeyed mills under the normal rate? 10
5. Under what circumstances are the extra rates for disintegrators and cleaning machines dispensed with? 15

Marks.

6. What is the additional rate (if any) on each of two separate mills, one containing not more than three pairs of vertical stones, and the other having three pairs of horizontal stones? 15
7. Define for rating purposes one set of rollers, and state the equivalent, in rollers, to one pair of vertical stones 15
8. Is any additional charge made for stones used for grinding or crushing cake parings, and by what method are the additional rates for the use of cotton seeds calculated? 10
9. Show rating for two non-fireproof mills adjoining but not communicating with each other and separated by entire party wall through and above the roof, the one five storeys in height, containing three pairs of vertical stones, three sets of rollers, and one pair of horizontal stones for seed crushing and grinding, using cotton seeds having more than two per cent. of weight in lint or fibre; the other a shed mill of ground floor only, containing two pairs of vertical stones, one set of rollers, and not using cotton seeds. Both mills conformable to all the oil mill warranties except as above 20
10. Under what conditions is the use of chemicals allowed without extra charge, and when is special rating required? 15
11. What is the relative rate for a warehouse adjoining a mill, having entire party wall through and above the roof, and communicating with the mill only by double fireproof doors or metal spouts or shoots? ... 15
12. Do the provisions for warehouse rating ever govern a mill rate? If so, give an example 15
13. Specify wording for machinery item 20
14. What extinguishing appliances are required in addition to automatic sprinklers to obtain the sprinkler discount, and what is the maximum discount allowed by the tariff? 20

FIRE BRANCH.

PART II., SUBJECT B.—MANUFACTURES (HOSIERY).

Two hours allowed for this paper.

QUESTIONS.

1. Name the component parts of the principal yarns used in the hosiery trade 20

	<i>Marks.</i>
2. Describe the difference between hosiery fabrics and woven fabrics	20
3. What are warp looms used for making?	15
4. What is fleecy hosiery?	10
5. Give a description of the following machines, and say what class of goods are chiefly manufactured on same:—	
1st. A Rotary machine... ..	25
2nd. A Cottons patent frame	25
6. What is the hazard to be apprehended from the use of cotton yarns in hosiery factories?	15
7. Describe the usual methods of pressing and trimming	20
8. (A) How is hosiery brushed, and (B) which forms the greater fire hazard—cotton or wool?	20
9. What is "gassing" and for what purpose is the process used?	15
10. Describe the process of welting, and state on what machines it is done	15

FIRE BRANCH

PART II., SUBJECT B.—MANUFACTURES (OIL).

Two hours allowed for this paper.

QUESTIONS.

1. What are the points which all oils have in common?...	15
2. Into what classes and sub-classes are oils usually divided?	15
3. Give a definition of "fixed oils"	10
4. (A) Give a list of the most common vegetable oils	10
(B) Name those which are mainly dealt with in the oil mills in the United Kingdom	5
(C) Give the principal reasons for the industry being confined to these	10
5. Write a very brief account of linseed, giving the percentage of oil extracted by pressure	20
6. (A) Give the methods for the extraction of oil from seed	5
(B) State the important one and give the reasons for its being so	10
7. How is seed in the silos of a modern mill kept in motion, and what is the object of having it in motion?	10
8. (A) Why is the storage of cotton seed in bulk more hazardous than that of linseed?	5

	Marks.
(B) Compare the hazard of the two after the crushing process has taken place	10
9. (A) Name all the processes in a modern oil mill ...	25
(B) Describe briefly those up to and including the moulding process	50

FIRE BRANCH.

PART II., SUBJECT C.—BUILDING CONSTRUCTION

(INCLUDING HEATING).

Three hours allowed for this paper.

QUESTIONS.

- Describe how a fire-resisting building should be erected so that each floor would form a separate structure 20
- State the effect of fire and water upon exposed mild steel and cast-ironwork construction 15
- In what manner should ironwork be protected against heat from fire, and how should iron girders be placed in walls? 15
- Are exposed iron girders, columns, or stanchions in your opinion preferable to stout wooden girders or posts? What would be likely to happen to a building exposed to a heavy fire in either case? ... 15
- State the various ways for protecting skylights and windows exposed to danger from adjoining or contiguous fire risks 15
- How is an ordinary wood floor constructed and supported? 15
- Is cement or ordinary mortar the better medium for joining or setting brickwork, and why? 15
- Which is the best method for effectually protecting openings in party walls? Give a description of various kinds of doors 15
- In your opinion how should concrete be made so as to resist fire and water damage? 12
- Which do you consider the best fire-resisting partitions for internal construction? 18
- Which is the best position for a hoist or lift? Describe the construction and protection of openings of same into the building 15
- Write a short specification to govern the electric-light wiring of an important building 15
- Briefly describe the heating of a building by steam ... 15

FIRE BRANCH.

PART II., SUBJECT D.—CORRESPONDENCE.

Two hours allowed for this paper.

QUESTIONS.

- | | <i>Marks.</i> |
|---|---------------|
| 1. Write a letter to A. B., an agent who has become a bankrupt, intimating the cancelment of his agency, which has been transferred to C. D., another agent in the same town. Write to C. D. announcing such transfer, and draft a letter to the policy-holders in the agency of A. B. requesting them to pay future premiums to C. D. | 45 |
| 2. An agent whose business is very trifling in extent advocates advertising the agency in the local newspapers at the expense of the Office. Write appropriately declining to accede to the suggestion | 25 |
| 3. A policy-holder, disturbed by circulars from furniture dealers and valuers, enquires whether, in case of loss, he will be required to produce a detailed priced valuation of every article claimed for, before his claim can be paid. Reply fully | 50 |
| 4. Reply to an application from a firm of saw millers for a discount by reason of their having a few buckets always filled with water kept in the saw mill, now rated under tariff at 21/- per cent., and such buckets having always been kept in the mill ... | 15 |
| 5. A Town-Clerk intimates that his Corporation will shortly require to insure 20 electric tram cars of various values, whilst in the tramway depot or on any part of the tramway system throughout the borough, and mentions that his Committee will object to the average clause being inserted in the policy. Reply, advising how the insurance may be satisfactorily arranged | 20 |
| 6. A policy-holder writes to the Office advising that his dwelling-house is lighted by acetylene gas, the generator, containing a charge of 5lbs. of carbide, being in an outbuilding—also used as a store for lumber, communicating with a coal-shed, and the insured states he presumes no advance on his present rate of 1/6 per cent. will be made. Reply | 20 |
| 7. An agent (A. B.) writes requesting the cancelment of a current policy effected through another agent (C. D.) by the issue of a new policy for an increased amount through the agency of A. B. Reply, stating the course to be adopted | 25 |

FIRE BRANCH.

PART II., SUBJECT E.—PLAN DRAWING.

Two-and-a-half hours allowed for this paper.

INSTRUCTIONS.

Draw to a scale of 40 feet to 1 inch.

The measurements given denote feet.

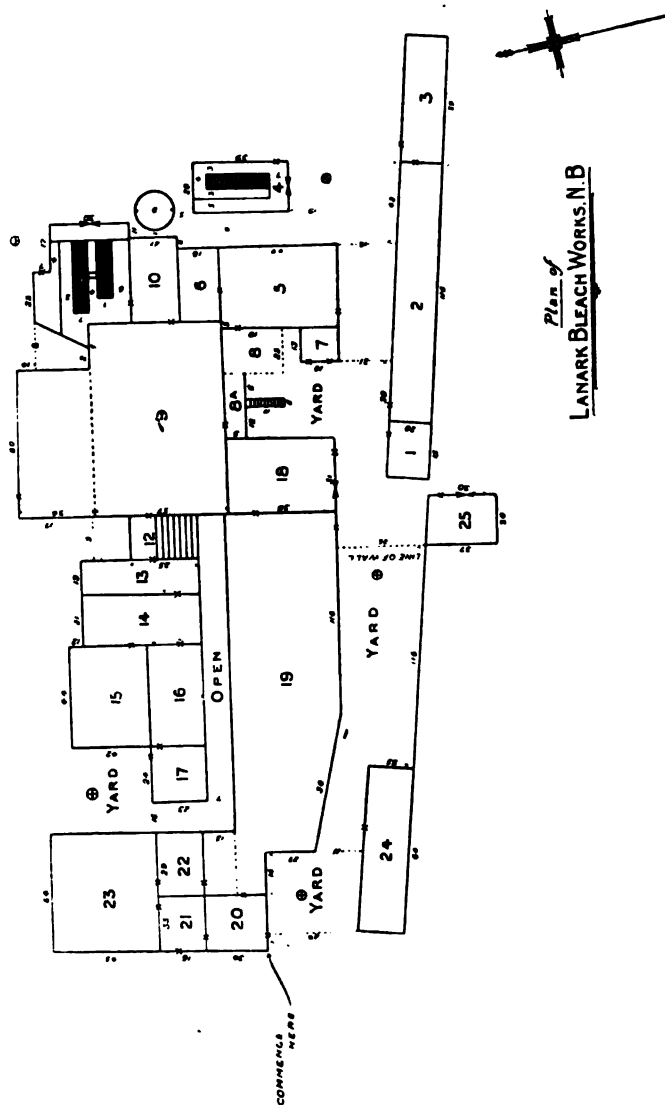
Buildings all of stone or brick unless otherwise described.

All party walls carried through roofs except where otherwise stated.

Doorways and openings indicated thus ×

Hydrants marked thus ○

1. Office, 1 storey, separated from No. 2 by timber partition.
2. Starching and sponging house, 1 storey.
3. Lumber store, north and east walls of timber, 2 storeys.
4. Boiler house, detached, 1 storey.
5. Two storeys, ground—Mangling and Starching; first—Cloth store, double iron doors to No. 6.
6. Cloth store, 2 storeys.
7. Starch store, 1 storey, timber built.
8. Loading shed, 1 storey, timber-built and corrugated-iron roof.
- 8a. Timber external stair and platform.
9. Partly 2 storeys (southern portion), and partly 2 storeys and attics; ground—bleach house and for steam cylinder drying; first—cloth warehouse; attic—store for sundries.
10. Steam engine house; double iron doors to No. 11. The chimney to east is nine feet in diameter.
11. Steam boiler and pump house.
12. External stone stair.
13. Blueing and starching, 1 storey. The wall between Nos. 13 and 14 carried up to roof.
14. Damping and starching, 1 storey.
15. Ironing, 1 storey.
16. Packing, 1 storey.
17. Ironing, 1 storey.
18. Hot-air heater and fan house. Single iron door to No. 19, 1 storey.
19. Stenter and steam cylinder drying. One storey, small portion to north with loft over.
20. Same as No. 18, 1 storey.
21. Loading place, 1 storey.
22. Cloth damping.
23. Calendering, folding, &c.
24. Three storeys and attic; ground—stable; 1st—hay loft, partly empty; 2nd and attic—empty.
25. Workers' dining-room, 1 storey.



FIRE BRANCH.

PART III., SUBJECT A.—LAW OF FIRE INSURANCE AND
FIRE INSURANCE CONTRACTS.*Two-and-a-half hours allowed for this paper.*

QUESTIONS.

- | | <i>Marks.</i> |
|---|---------------|
| 1. What is the derivation of the word "Policy"? | 5 |
| 2. Define what constitutes a Policy of Insurance for the purposes of the Stamp Act | 10 |
| 3. What is the essential stipulation or phrase in an Interim Protection Note which makes it a contract of insurance? | 20 |
| 4. What is the position in the event of acceptance of a premium from a proposer by an unauthorised agent, and the occasion of a fire before the premium is accepted by the Insurance Office? | 20 |
| 5. What object is served by inserting in the policy what are known as the "Conditions of the Insurance"? | 10 |
| 6. If the written part of the policy is inconsistent with the printed conditions, which must prevail, and why? | 10 |
| 7. If, on the occasion of a fire, under a policy covering goods in certain specified places and in transit between such places, it is then ascertained that the location of the goods does not conform to the description in the policy but that the location is only varied to an extent which would not in ordinary practice have required any additional premium for the privilege of more extensive range, is there any liability under the policy for the fire referred to? If not, why? | 25 |
| 8. What would be the position if a person effected an insurance on a private dwelling-house but omitted to mention that the windows overlooked a saw mill or some other equally hazardous risk, and the dwelling-house was subsequently damaged by a fire wholly unconnected with the hazardous risk referred to? | 20 |
| 9. An Office gives notice before the due date that it will not continue an Annual Insurance without the payment of an increased premium, and the Insured replies that he will not pay it. A fire occurs within the 15 days following upon the due date of the Insurance, and the Insured then tenders the increased premium in order to fix the liability on the Office. Explain fully the position of the Office in regard to the Insurance | 20 |

- Marks.*
10. What is the position if a renewal premium is not paid within 15 days of grace and a fire subsequently occurs, the Office afterwards accepting the premium in ignorance of the disaster? 20
11. Describe the remedy when property has been burnt by the felonious act of persons riotously assembled, and cite the Act under which compensation is claimed, and what constitutes the "Local Authority" under the Act? 20
12. A lessor recovers under his policy for damage caused by gas explosion, and at the same time the lessee (who is responsible for repairs) is indemnified by the Gas Company, whose servants have by negligence caused the explosion. State the position of the Insurance Office, and cite the law case usually relied upon as an authority 20

FIRE BRANCH.

PART III., SUBJECT B.—AVERAGE CLAUSES AND LOSS APPORTIONMENTS.

Two-and-a-half hours allowed for this paper.

QUESTIONS.

1. Apportion the following loss between Offices:—

Company A. Specific Insurance in Warehouse	
No. 1	£800
Company B. Specific Insurance in Warehouse	
No. 1	500
Company C. Specific Insurance in Warehouse	
No. 1	200
Company D. Floating Insurance and	
Subject to Average in Ware-	
houses Nos. 1 and 2	1,000
Company E. Floating Insurance and	
Subject to Average in Ware-	
houses Nos. 1, 2, and 3	2,000
	<hr/>
	£4,500
Values:—Warehouse No. 1	£2,000
,, No. 2	2,000
,, No. 3	2,000
	<hr/>
	£6,000

Loss: £1,000 in Warehouse No. 1

Marks.

2. Work out the following apportionment and explain the result. The insurances are subject to the two Conditions of Average:—

Company A. £4,000 on Cocoa in Warehouses, Quays, and Wharves.

Company B. £4,000 on General Merchandise in Warehouses, Quays, Sheds, Wharves, and Ships.

Value of Cocoa	...	...	...	£5,000
Value of other goods	...	...	...	5,000
				<u>£10,000</u>

Loss on Cocoa in Warehouses, £2,000 30

		Value.	Loss.
Insurance A, Specific	.. £2,000	£5,000	£1,000
Insurance B, subject to average	2,000		
			<u>£4,000</u>

The Specific Insurance A contains a condition that if in the event of a loss there shall be another insurance covering the same property, subject to average, the insurance by A shall be similarly S to A. Show the apportionment under such conditions and comment upon the result, giving your opinion as to what would be a fairer method of adjustment towards the insured.

20

4. A fire occurs on a farm homestead and causes £1,000 damage to agricultural produce in ricks in the open air and in the buildings; £75 damage to implements and utensils of husbandry; and £400 damage to out-buildings all under one roof. The produce is covered up to $\frac{3}{4}$ ths full value. The property is insured as follows, subject to the special condition of average:—

Agricultural produce excluding growing crops	...	...	...	£1,000
Implements and utensils of husbandry				100
Out-buildings affected	...	...		200

Apportion the loss under the three items.

20

5. A fire occurs in a timber yard on which there are the following insurances:—

In Office A. £1,000 on timber not within 100 yards of a saw mill.

Marks.

In Office A. £3,000 on timber within 100 yards
but not within 30 yards of a saw mill.

In Office B. £1,000 on timber within 100 yards
but not within 30 yards of a saw mill.

In Office A, £5,000 on timber within 30 yards
but not within 5 yards of a saw mill.

Each item Subject to Average.

Damage:—£1,500 on 1st risk (total loss).

£2,500 on 2nd risk (£1,000 under-
insured).

£2,000 on 3rd risk (full insurance).

Apportion the loss.

20

6. A fire occurs in a provision merchant's warehouses A, B, and C, all communicating. His loss on contents is:—

On A	...	...	...	£3,000
„ B	...	...	...	1,000
„ C	...	...	...	500

There are the following full insurances:—

In Office K	...	£4,000 in A and B.
„ L	...	1,000 in B.
„ M	...	3,000 in B and C.
„ N	...	2,000 in A, B, and C.

Each insurance subject to the two Conditions of
Average. Apportion the loss.

30

7. A fire occurs in a metal works. There are the following insurances:—

Building	...	...	£2,000 in Office A.
„	...	...	1,000 „ B.
Machinery	...	...	2,000 „ A.
„	...	...	500 „ B.
Stock	...	...	1,000 „ A.
Stock, including tools and movable utensils	...	800	„ B.
Damage to Building	...	£1,000	
„ Machinery	...	1,500	
„ Stock	...	1,200	
„ Tools and mov- able utensils	...	200	

Apportion the loss.

30

8. Apportion the following loss between Offices:—

A. £700 on Building.	Loss
B. £200 on Stock.	£700 on Building.
C. £500 on Building and Stock.	300 on Stock.

£1,400

£1,000

20

FIRE BRANCH.

PART III., SUBJECT C.—FIRE EXTINGUISHMENT AND
SPRINKLER INSTALLATIONS.*Two-and-a-half hours allowed for this paper.*

QUESTIONS.

Marks.

1. A firm have only one steam boiler, the fire of which is drawn at least twice every year. How would this restrict them in their choice of ordinary fire extinction appliances and as regards possible water supplies to a sprinkler installation? ... 5
2. State the minimum clear water-way required in mains and hose pipes to secure a discount under the rules 2½
3. What discount can be allowed for a stationary fire-engine of efficient power with hydrants attached or in yard? ... 5
4. The supplies to a sprinkler installation consist of connections to two separate public mains supplied from independent sources, and the rule conditions that the separate connections be carried separately close up to the wall of the sprinklered building. State fully what you consider this is intended to prevent ... 20
5. The water supplies to a sprinkler installation are:—Town's main and elevated tank. State the position of the necessary back-pressure valves and describe fully what would occur if they were dispensed with 20
6. A sprinkler installation derives its water supplies from two independent town's mains. Describe how you would ascertain the running pressure on each separate main ... 20
7. You are offered as alternative water supplies to a sprinkler installation—
 - (A) A connection with a town's main, and automatic pump;
 - (B) Elevated tank and non-automatic pump.
 Which would you select, and why? ... 15
8. A non-fireproof factory communicates by doors and windows with a fireproof shed occupied for storage purposes only. The non-fireproof factory is sprinklered, but the fireproof communicating shed is not sprinklered. The owners refuse to sprinkler the fireproof shed. State fully the position you would adopt ... 15

	<i>Marks.</i>
9. Name the accepted sources of water supply to a sprinkler installation: (A) for two supplies; (B) for one supply	10
10. State how many heads would be necessary to protect the floor of a corn mill with an area of 6745 square feet	7½
11. Subsidiary stop valves are not allowed except in certain specific cases. Please quote them	10
12. When is a dry-pipe installation necessary? And how many sprinkler heads are allowed to be controlled by one stop and air valve?	12½
13. Assuming the area of each floor of a building about to be fitted with sprinklers were known, what other particulars would be required before the number of heads could be estimated?	12½
14. To enable a connection with the town's main to be accepted as one of the supplies to a sprinkler installation, what pressure must be maintained at the level of the highest sprinkler, both day and night?	2½
15. Where an elevated tank is accepted as one of the supplies, state the distance the base must be above the highest sprinkler head and the approximate pressure which would be registered at the sprinkler head	20
16. If a pump be accepted as one of the supplies to an installation, state whether it may be automatic or non-automatic, and give any necessary warranty that would require inserting in the policy	7½
17. State the position and number of pressure-gauges required on the following supplies to an installation: (A) Town's main and pump, (B) Town's main and pressure tank	15
18. State respectively the maximum number of heads that feed pipes of the following diameters could carry under the rules: 2-inch, 3-inch, 4-inch, 5-inch, and 6-inch	10

FIRE BRANCH.

PART III., SUBJECT D.—ELECTRICITY.

Three hours allowed for this paper.

QUESTIONS.

- | | |
|--|---|
| 1. Give the meaning of the terms Volt, Ampère, Ohm, and Watt | 5 |
| 2. Give a brief definition of Ohm's Law of Resistances, and illustrate its application to the first three terms in the preceding question | 5 |

Marks.

3. Describe the difference between the "tree" and "multiple circuit" systems of wiring, and state the advantages (or defects) of the two systems, as compared with each other 10
4. Describe the three-wire system, and give reasons why in the case of buildings so wired it may probably be unadvisable to continue it in the case of doubling the working voltage, *i.e.*, 100 to 200 volts... 20
5. In a building already wired on the three-wire system, what are the best alternatives to get over the difficulty (short of a re-wire) in the event of a compulsory doubling of voltage? 20
6. What is the difference between an "earthed" return and an "earth" return? and give reasons why the latter is usually inadmissible 20
7. Why in the case of an accumulator installation is an automatic cut in-and-out device necessary between the cells and dynamo; and state what, in your opinion, is the chief fire risk of a large storage battery? 10
8. Give, as far as you can, the chief points to be attended to in surveying an electrical installation in the following risks, *viz.* (1) a paper mill (using pulp); (2) a corn mill; (3) a cotton mill; (4) a dye-house; (5) a printer by electrical power 20
9. In the case of the following two systems of mechanical protection, *viz.*, woodcasing, metal tubing (iron or steel), and also insulated cables run on insulators, which, in your opinion, would be the most suitable for the risks mentioned in the previous question? and give reasons 25
10. An installation is originally wired and fitted for 100 volts, and afterwards changed over to 200; state the points where the principal risk is to be apprehended, and also why many old types of fittings are unsafe under such conditions 20
11. In surveying an electric lighting or power station, what are the points (structural and electrical) requiring special care, and if the station be a high-tension one (2,000 volts or upwards) require specialising in the report? 25
12. Why does the question of enclosing motors of the open type, and intended to work under those conditions, require very careful consideration, and also state why in some ways polyphase alternating motors are preferable to those using continuous current? ... 20

FIRE BRANCH.

PART III., SUBJECT E.—CHEMISTRY.

Three hours allowed for this paper.

QUESTIONS.

The value of each question is the same.

1. Give a short account of the preparation and refining of cane sugar, indicating the relationship between cane sugar (sucrose) and glucose.
2. Describe the synthetical methods of preparing hydrocyanic acid and one or two of its salts.
3. How is copper obtained from copper pyrites? How are any by-products utilised?
4. Describe the manufacture of calcium carbide and of acetylene. Say briefly what you know of the explosive properties of the latter and of the precautions that should be taken in respect of them.
5. Give a short account of the manufacture, and hazards connected therewith, of any three of the following varnishes:—(A) Oil varnish, (B) laquers or varnishes made with dammar, (C) copals, (D) shellac, (E) varnish made of celluloid. What substitutes for turpentine are used in the manufacture of varnish?
6. Give an account of any "solidified petroleum" or solidified spirits with which you may be acquainted.
7. What does the term "ageing," as employed in dyeworks and by calico-printers, mean? What special hazards arise in connection with it? Give a short account of at least one ageing process.

LIFE BRANCH.

PART II., SECTION A.—PRACTICE OF OFFICES IN
REGARD TO PROPOSALS,
MEDICAL AND OTHER REPORTS, &c.FORMS OF POLICIES AND CONDITIONS OF
ASSURANCE.*Two hours allowed for this paper.*

QUESTIONS.

1. Give briefly the meaning of the following medical terms:—

Pneumonia.

Aortic incompetency.

Phlebitis.

Paraplegia.

Arthritis.

Atrophy

... 30

Marks.

Marks.

2. Where you have reason to believe a proposer has suffered from one of the following "illnesses," on what organs would it be advisable to ask the local examiner to report fully, and why?

Rheumatic fever.

Albuminuria.

Gout.

"Spitting of blood." ... 24

3. On what terms do you think the following proposals should be accepted, and why?—

Occupation, farmer. Age, 55.

Family History :—	Ages.		Cause of Death.
	If alive.	At death.	
Father	—	74	Decay.
Mother	—	36	Typhoid fever.

Three sisters living, ages from 42 to 50; also maternal aunt, age 80.

Deaths:—One brother and two sisters, all at age 40, and all of consumption. Grandparents died ages 66, 70, 70, and 72. No known instance of consumption among collaterals.

Personal History:—Height, 5 ft. 7½ ins. Weight, 11 st. Well formed, spare, and strong. Never seriously ill since childhood ... 10

Occupation, cheesemonger. Age 40.

Family History :—	Ages		Cause of death.
	If alive.	At death.	
Father	—	53	{ Inflammation of bowels.
Mother	—	53	

Two brothers and one sister, ages from 28 to 36.

Deaths:—None.

Personal History:—Height, 5 ft. 9 ins. Weight, 14 st. 10 lbs. ... 10

4. Under what circumstances are policies "world wide and occupation free" now usually issued, and when is it advisable to issue policies with restrictions as to travel and occupation? ... 10
5. Draft an ordinary whole life policy, admitting age, issued by the Jupiter Insurance Company, Ltd., for £1,000 with profits, in favour of John Brown, at a premium of £33 10s. ... 16

LIFE BRANCH.

PART II., SECTION B.—ELEMENTARY LAW;
 USAGE IN REGARD TO LOANS, SURRENDERS,
 CLAIMS;
 CORRESPONDENCE; ADVERTISING;
 CLIMATIC CONDITIONS, COLONIAL AND FOREIGN.

Two-and-a-half hours allowed for this paper.

QUESTIONS.

	<i>Marks.</i>
1. (A) State the provisions of the Married Women's Property Act of 1882, dealing with Life Assurance policies	8
(B) Under what circumstances, if any, would a policy effected in terms of this Act not be liable to death duties?	4
(c) Can a woman recover income tax on premiums paid under a Life Assurance policy?	4
2. How many witnesses, if any, are required to a mortgagor's signature under a (A) English, (B) Scotch, and (c) Irish Mortgage Deed?	9
3. Draft a form of receipt for the surrender value of a Life policy	6
4. When settling a claim under Probate is it necessary to get the signature of all the executors?	5
5. Where a policy has been assigned under a marriage trust, is it necessary to have the signature of all the trustees on the discharge when the policy becomes a claim?	4
6. A proposal has been declined by your Head Office on account of proposer's intemperate habits, disclosed by the private friends in their reports. Draft a letter intimating the Head Office decision, and state what should be said to the proposer in the event of his calling for information in regard to the reason of his declination	10
7. Draft a letter of appointment as an agent of a Life Office	8
8. Draft a circular to be sent to agents just before the close of a financial year, urging them to secure proposals before the close of the books	8
9. How would you proceed to arrange the distribution of an explanatory leaflet of a special scheme of Life Assurance amongst the public in the town in which your Office is situated. What considerations would guide you in regard to the class to which the leaflet should be issued?	10

- Marks.*
10. Employing the descriptive terms—good, fair, bad, uninsurable—how would you describe the healthiness and the climatic conditions of residence in (A) Yokohama, (B) Havana, (C) Manila, (D) Gold Coast, (E) Khartoum, (F) Pernambuco, (G) Bombay, (H) Johannesburg; and indicate what extra, if any, should be charged in each case ... 24

LIFE BRANCH.

PART II., SECTION C.—BONUS SYSTEMS, METHOD OF CALCULATING EXPENSE RATIOS, &c.

Two hours allowed for this paper.

QUESTIONS.

1. What system of bonus distribution do you prefer?
Give your reasons 10
2. An Office, valuing yearly, distributes its bonus by way of reduction in the next premium. Discuss this method, referring to the question of (A) desirable modifications of method, (B) popularity 10
3. The ratio of expenses of premium income in Office A is 12 per cent.; in Office B it is 15 per cent. Under what circumstances may this comparison be misleading? 10
4. How could you compare their relative expenditure more accurately, and what data would you require to do so? 15
5. An Ordinary Whole Life Non-profit policy taken out at age of 30, has been 30 years in force. Why should it have a surrender value? 10
6. Give the form of Revenue Account in which the Accounts of Life Insurance Companies must be rendered to the Board of Trade 15
7. Discuss the characteristic features of the mortality of the Carlisle Table 15
8. Why was the Carlisle Table supplanted by the Hm, or by the Hm and Hm5 Tables, for valuation purposes? 15

ACCIDENT BRANCH.

PART I A., SUBJECT:—CORRESPONDENCE.

One-and-a-half hours allowed for this paper.

QUESTIONS.

Marks.

1. Write a letter to the manager of a bank in a town where your Company is not represented inviting him to take up an agency 25
2. Having been requested by your Head Office, about a month before the expiration of the Company's financial year, to get in as many o/s agents' balances as possible, draft a suitable letter to agents 25
3. Having ascertained that a certain agent has for some time been taking all his best risks to another Company, including transfers from your own Office, and only bringing those to you which are of a doubtful character or which the other Company will not accept, write fully to H.O. on the subject. (The chief reason for the agent's action may be taken to be that the other Company have agreed to pay him a higher rate of commission.) 30
4. A Personal Accident policy-holder (direct case) writes asking that the Company will agree to allow him the usual commission paid to agents off his premium, and that if this is refused he will discontinue the insurance. Your Company not being willing to agree to "own-case" agents, write suitable letter in reply 30
5. An agent having become bankrupt, draft circular-letter to be sent to policy-holders insured through his agency 25
6. Having declined the renewal of an Employers' Insurance policy on the ground of incorrect particulars supplied on proposal, bad accident record, and the employer actively assisting workmen in their claims, the agent writes that unless you renew the policy or at all events quote for the renewal, his interests will suffer in other directions and he will resign his agency and transfer all his business, which is considerable. Write him a suitable letter in reply 30
7. Head Office having written complaining that the amount of Personal Accident business coming through the branch is much below that of the previous year, write letter in reply giving reasons for this 35

ACCIDENT BRANCH.

PART IC., SUBJECT:—CLASSIFICATION OF RISKS
(PERSONAL ACCIDENT).

One hour allowed for this paper.

QUESTIONS.

- | | <i>Marks.</i> |
|---|---------------|
| 1. How would you classify the following occupations:
land surveyor; saddler (master working); engineer
(mechanical superintending); brewer (superin-
tending)? | 50 |
| 2. Draft the opening words of a policy, to make it clear
that an ironfounder, superintending only, has been
accepted as a first-class risk | 50 |
| 3. What further information would you require to
classify the following risks: painter, chemist,
colliery owner, farmer, shipbuilder? | 50 |
| 4. Give reasons for charging an extra (if any) for an
Accident and Disease policy to a cattle dealer,
physician, plumber, and sanitary inspector | 50 |

ACCIDENT BRANCH.

PART ID., SUBJECT:—KNOWLEDGE OF EMPLOYERS'
LIABILITY.

One-and-a-half hours allowed for this paper.

QUESTIONS.

- | | <i>Marks.</i> |
|--|---------------|
| 1. What are the conditions under which an injured
workman can recover compensation under the
Workmen's Compensation Act, 1900? | 30 |
| 2. Specify the grounds on which a claim can be defended
under the Workmen's Compensation Act | 35 |
| 3. Is a workman entitled to recover under the
Employers' Liability Act on proving that his
accident was due to plant or machinery which in
the course of use turned out to be defective? Give
reasons for answer | 35 |
| 4. What is the doctrine of Common Employment, and
how was this affected by the Employers' Liability
Act | 30 |

	<i>Marks.</i>
5. What is the basis or scale of compensation under the Workmen's Compensation Acts for fatal and non-fatal accidents?	30
6. Under what circumstances can an injured workman bring a claim, under Section 4 (commonly called the Sub-Contracting Clause) of the 1897 Act, against persons other than his employer—	
(A) Under the Workmen's Compensation Act, 1897.	
(B) Under the Workmen's Compensation Act, 1900	40

ACCIDENT BRANCH.

PART IIA., SUBJECT:—CLAIMS AND THEIR SETTLEMENT.

Two hours allowed for this paper.

QUESTIONS.

PERSONAL ACCIDENT.

1. Specify the classes of disablement under P. A. policies and give a definition of each 20
2. Specify as many as you can of the risks which are usually excluded from P. A. policies 25
3. A Personal Accident policy-holder reports an accident which happened to him a fortnight previously, about 11 o'clock in the evening. The particulars given on the notice form and in his correspondence appear unsatisfactory and suspicious. Write a letter to your local inspector indicating the points upon which enquiry should be made 20

(N.B.—Candidates may choose whatever form of accident or suspicious circumstances they think fit.)

EMPLOYERS' LIABILITY ACT, 1880.

1. Enumerate as fully and completely as you can the various points which it would be necessary for an injured person to prove in an action against his employer under this Act by reason of the alleged negligence of a fellow-workman 25
2. On what basis is compensation usually assessed in claims under the Act in (A) fatal and (B) non-fatal cases? 20

Marks.

3. An accident is reported to a workman on a building in course of construction, caused by the breaking of a plank forming part of the scaffold. To what points would you consider it necessary to direct your enquiries in investigating the case ?... 25

WORKMEN'S COMPENSATION ACT.

1. A workman earning 45s. 6d. per week on an average is injured and away from work 15 weeks. He returns to light work, and for some months earns wages which fluctuate between 25s. and 35s. per week. He then gets a job at a fixed wage of 37s. 6d., which may be taken as the limit of his earning capacity by reason of his injury. How would you deal with such a case? ... 20
2. What has been the effect of the leading decisions in regard to the assessment of compensation in partial dependency claims for fatal accidents? ... 20
3. What arguments would you adduce in interviewing a workman, permanently disabled by the loss of his right arm, who is in receipt of 15s. per week compensation, and whose claim you were endeavouring to settle? ... 25

ACCIDENT BRANCH.

PART IIB., SUBJECT:—POLICY DRAFTING.

One hour allowed for this paper.

QUESTIONS.

1. A Personal Accident policy is granted to a "Lighterman Master Superintending and occasionally afloat." Draft an endorsement so that if the assured meet with a fatal accident whilst afloat or whilst engaged in the docks, &c., only one-half of the sum assured against accidental death will be payable ... 40
2. An extra premium to cover football has been paid. Draft an endorsement to cover that risk under a Personal Accident policy ... 25
3. An employer desires that his Workmen's Compensation policy shall, in addition to his legal liability, cover his men for half wages for the first fortnight of disablement. Draw up an endorsement giving effect to this ... 40

- Marks.*
4. Write out the clause or condition appearing in most Personal Accident policies, excluding—
 - (A) Injuries, &c., received whilst assured is drunk, fighting, &c.;
 - (B) Injuries, &c., arising from disease, weakness, &c.;
 - (C) Injuries happening from popular riot, &c. 45
 5. What are the chief points you would provide for in drafting a policy insuring an employer against his legal liability for accidents to his workpeople? ... 50

ACCIDENT BRANCH.

PART IIC., SUBJECT:—INDEMNITY (THIRD PARTY).

One-and-a-half hours allowed for this paper.

QUESTIONS.

CORRESPONDENCE.

1. Draft a letter to an agent who has enquired as to what is covered by Third Party Insurance, explaining its general bearing ... 25
2. A wholesale warehouseman desires to insure against Third Party claims. Draft a letter showing the information you would require ... 20

CLAIMS.

3. A Town Council intimates a claim under a Third Party policy by a member of the public injured by slipping upon a grating in the street. What would the injured person require to prove in order to found a claim against the Town Council? ... 25

SETTLEMENT.

4. Assuming that the person injured was a provision dealer, aged 40, with a turnover of about £600 per annum, and that the injury was a broken kneecap, how would you deal with the claim? ... 30
5. A collision takes place between a motor omnibus and a governess car in which there are two ladies. The ladies are thrown out and, being in a good middle-class position, make a claim. Liability being admitted, what steps would you take leading up to a settlement of the claim? ... 30

Marks.

LEGAL ASPECTS.

- | | |
|---|----|
| 6. What particulars would you ask from an injured person who made a claim upon the holder of a Third Party policy, for such injury, alleging fault and negligence on the employers' part? ... | 20 |
| 7. What must be alleged to found a claim against an employer by a third party injured through the fault of the employer or his servants, and what would be the chief grounds of defence? ... | 25 |
| 8. Assuming that the assured knew of a defect in his plant, and continued to use it, an accident occurring to a member of the public thereby, how would you deal with the claim as between the Insurance Company and the assured? ... | 25 |

ACCIDENT BRANCH.

PART IID., SUBJECT:—MEDICAL AND SURGICAL TERMS.

One hour allowed for this paper.

QUESTIONS.

1. Explain the following:—

(A) Orbital cellulitis.	
(B) Cystitis.	
(C) Hemiopia.	
(D) Pylorus.	
(E) Peroneus longus	... .. 50
 2. What are meant by—

(A) Larynx.	
(B) Myalgia.	
(C) Duodenum.	
(D) Pericardium.	... .. 50
 3. Explain in your own language the following:—

(A) Mitral stenosis.	
(B) Tenotomy.	
(C) Tubercular meningitis.	
(D) Perisystole.	... .. 50
 4. Give the names of the bones found in the leg and foot, from the knee
- | | |
|--------|----|
| | 50 |
|--------|----|

ACCIDENT BRANCH.

PART IIIA., SUBJECT:—LAW: RELATIONSHIP
BETWEEN EMPLOYER AND EMPLOYED.*Three hours allowed for this paper.*

QUESTIONS.

Marks.

FATAL ACCIDENTS ACT, 1846.

1. What new liability did the passing of this Act bring upon employers? 10
2. What relations receive benefit by this Act? Describe fully 10
3. In whose name may actions be brought, and within what time? 10
4. What particulars is the plaintiff required to give in making a claim under this Act? 10

FACTORY AND WORKSHOPS ACT.

1. Describe generally the provisions as to fencing machinery contained in this Act 10
2. What are the regulations of this Act as to the placing of self-acting machines? 5
3. In what way do these provisions affect the relationship between employer and employed, and what is their bearing from an Insurance point of view? 20
4. Under what circumstances may an order be made as to dangerous machinery, and unhealthy or dangerous factory, and to whom is the application for such order to be made? 10
5. What are the duties of Inspector of Factories and of the certifying surgeon? 10

EMPLOYERS' LIABILITY ACT, 1880.

1. Under what circumstances would an employer be liable for accidents to his workmen? 10
2. What are the usual grounds of defence to claims under this Act? 10
3. Is it necessary under this Act to show that the claimants had expectations of pecuniary benefit from an employee killed whilst at work? Explain fully 5
4. What is the mode of serving notice of injury under this Act, and within what time must notice be made in case of disablement and of fatal accident? 10

Marks.

WORKMEN'S COMPENSATION ACTS, 1897 AND 1900.

1. What are the general provisions of this Act bringing workmen within its benefits in case of accident? ... 15
2. An accident having happened to a workman of an engineering firm engaged putting up machinery in a cotton mill, would the employer of the workman be responsible under this Act? Give reasons ... 10
3. In the case of injury to the workman of a sub-contractor, what description of work would bring a claim by the injured workman under this Act? ... 10
4. Under what circumstances would the undertaker have a right of indemnity against the workman's own employer? ... 5
5. What are meant by the expressions "undertaker" and "workman" in this Act? ... 10
6. May an injury by accident include disease? Give examples and exceptions ... 10
7. What is required to make an agriculturist liable for injuries to his workmen under the Act of 1900, and what is the provision with regard to men engaged partly in agriculture and partly in other work? ... 10

ACCIDENT BRANCH.

PART IIIb., SUBJECT:—LAW RELATING TO ACCIDENT INSURANCE.

Two hours allowed for this paper.

QUESTIONS.

1. Explain the difference between a policy of Assurance and one of Indemnity, giving examples of each in connection with Accident business ... 20
2. Two passengers are travelling in a railway carriage when a collision occurs through the negligence of the engine driver. One passenger is killed and the other injured. Both are holders of Personal Accident policies. The injured person in the one case, and the widow and family in the other, sue the Railway Company for damages, and awards are made of £2,000 in each action. In what way does this affect the rights and position of (A) the claimants, (B) the Railway Company, (C) the Insuring Company? Give reasons for answers ... 35

	<i>Marks.</i>
3. What is the object of making the observance and performance of certain conditions in policies, conditions precedent to the right of the policyholder to benefit thereunder ?	20
4. What is the effect of the decision in <i>Sinclair's</i> case ? Give instances of what would and what would not constitute an accident within the principles laid down in the decision... ..	25
5. An agent for an Insurance Company fills in the answers to the questions on a proposal form for Personal Accident Insurance on behalf of a proposer. Certain of these answers are found to be contrary to the facts. What are the rules of law which apply in such cases ?	25
6. A proposal for Personal Accident Insurance is sent to a Company, the risk accepted, and policy issued in which the payment of the premium is recited in the usual way. The policy is sent to the agent, and a few days afterwards the proposer meets with a fatal accident and his widow sends in a claim. The agent says he handed over the policy on the promise of the proposer to send him the premium which, however, he in fact never received. What is the position of the parties ? Give reasons for answer	25
7. What are the general rules of law in regard to the construction of Accident and other policies of Assurance ?	25
8. What are the general principles in regard to (A) a proposer specifying his trade, occupation, or profession in making a proposal for Personal Accident Insurance, and (B) a subsequent change therein during the currency of the policy ?... ..	25

ACCIDENT BRANCH.

PART IIIc., SUBJECT:—LAW RELATING TO EMPLOYERS' LIABILITY (CONTINENTAL).

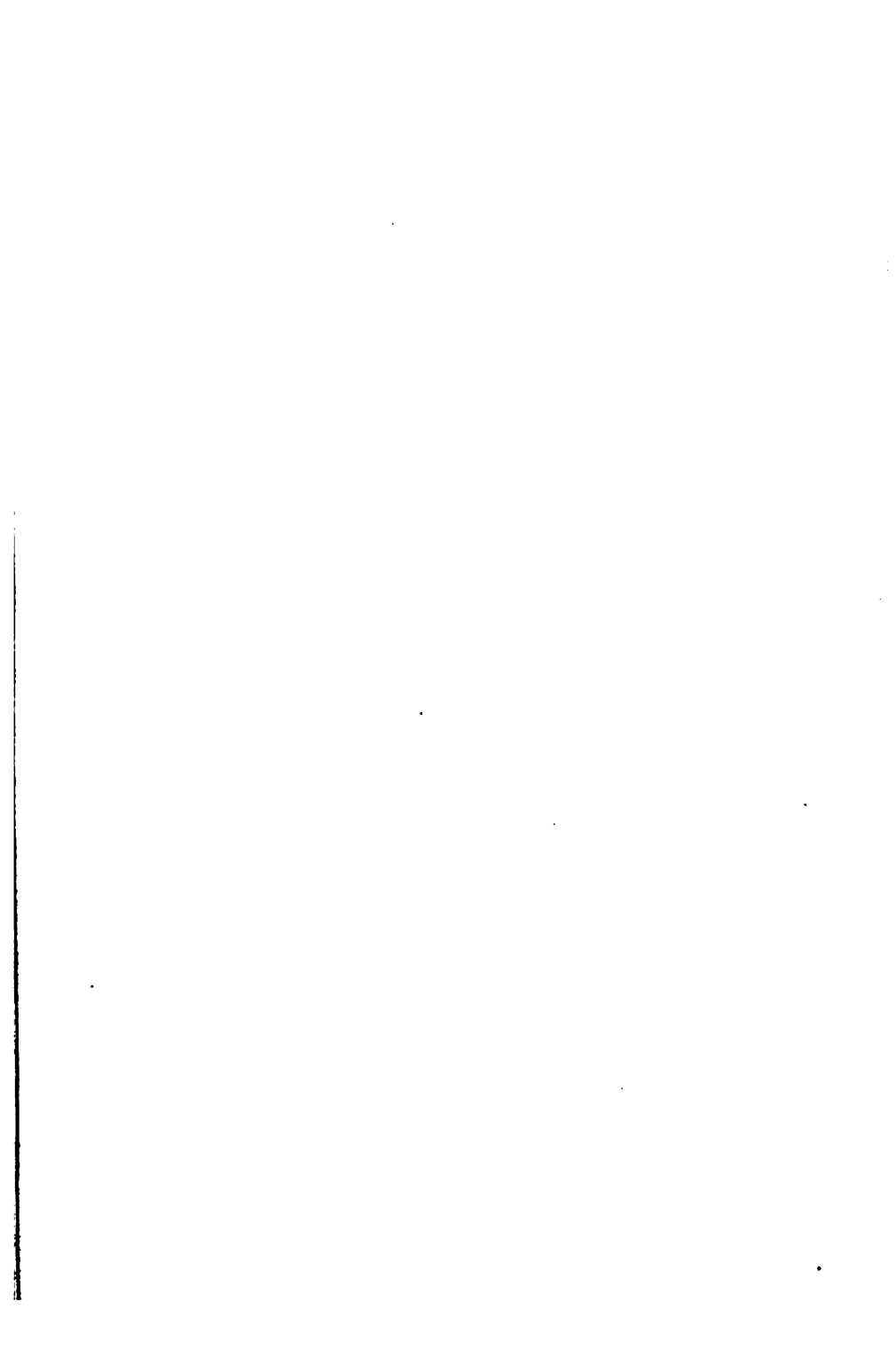
One-and-a-half hours allowed for this paper.

QUESTIONS.

1. Give a synopsis of the French Workmen's Compensation Acts of 9/4/98 and 22/3/02 40
2. Discuss from an employer's standpoint the advantages or disadvantages of the German system of compulsory State insurance, compared with the method adopted by Denmark and Italy respectively 30

Marks.

3. Compare the classes of employment covered by the German and the Austrian Workmen's Compensation Acts respectively 20
4. State the minimum and maximum amounts payable in respect of accidental death under the German, Austrian, Dutch, and Italian Acts, respectively ... 25
5. In those countries where insurance with the State is not compulsory, what precautions are taken to protect the compensation due to workmen or their dependents against the insolvency of the employer? 25
6. What reserve is made under the Austrian law for accidents involving the payment of pensions, and how is it raised? 20
7. Detail the regulations in force under the German Acts with regard to the notification of accidents, and the procedure followed until a final decision as to the compensation due has been arrived at 20
8. What income must a workman have to exempt him from the obligation of being insured against accidents in the following countries: Germany, Holland, Italy, Norway, Austria, and Finland?... 20



The following is the Official List of the Successful Candidates at the Examinations held simultaneously at the various Insurance centres, April 8th to 18th, 1907. The letter "P" opposite a name signifies Pass, "H" Honours, and "C" Certificates accepted to 16th May, 1907.

FIRE BRANCH.

FIRE BRANCH.																											
	PART I.								PART II.							PART III.											
	Policy Drafting.		Re-Insurances.	F.O.C.	(General Rules.	Book-keeping.	Chemistry (Elementary).	Electricity (Elementary).	Passed in Part I.			Cold Storage Warehouses.	Tariffs.			Pro. of Manfr.	Building Construction.	Correspondence.	Plan Drawing.	Passed in Part II.	Law of Fire Insurance.	Average Clauses.	Loss Apporpnmt.	Fire Extinguishment.	Electricity (Advanced).	Chemistry (Advanced).	Passed in Part III.
	Hosiery.	Eng. & W.							Oil Mills.	Scotland.	Hosiery.		Eng. & W.	Oil Mills.	Scotland.												
ABERDEEN.	..	P	..	..	..	..	..	..	..	..	P	..	P	..	P	..	..	..	..	..	..	..	..	..	..	..	..
Anderson, John Alex. C., Union	..	P	..	..	..	..	..	..	..	..	P	..	P	..	P	..	..	..	..	..	..	..	..	..	..	..	..
BIRMINGHAM.
Armstrong, Robt. Percy, Royal Exchange
Brown, Herbert, Atlas	H	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Burrow, George Wyon, Sun	C	..	..	..	..	..	..	..	H	P	..	..	..	..	..	P	..	..	..	..	..	..	..	..

[illegible]

[illegible]

NOTTINGHAM.

Charters, Geoffrey E. M., *Alliance*
 Hill, Arthur Reginald, *Northern*
 Hodgkinson, Harold Wm., *North*
British and Mercantile
 Radmall, Fredk. H., *Guardian* ...
 Richmond, Francis A., *Atlas* ...
 Riley, Samuel John, *Atlas* ...
 Sharpe, Bernard Chas., *London*...

PERTH.

Brown, John Milne, *General*
Accident
 Clarke, Harry, *General Accident*
 Henderson, W. R., *General Acci-*
dent
 Hutchison, Jno., *General Accident*
 Stirling, Wm., *General Accident*

SHEFFIELD.

Jones, Claude L., *Alliance* ...
 Moorhouse, J. D., *Alliance* ...

NAMES OF SUCCESSFUL CANDIDATES, 1907—continued.

LIFE BRANCH.

	PART I.				PART II.			
	Arithmetic.	Algebra.	Book-keeping.	Passed in Part I.	Proposals, Forms of Policies, &c.	Law Correspondence, Advertising, &c.	Bonus Systems, Expense Ratio.	Passed in Part II.
ABERDEEN.								
Hay, Charles, <i>Scottish Temperance</i> ..	C	C	C	1907	..	..	..	..
CAMBRIDGE.								
Carr, Norman, <i>Prudential</i> ...	..	...	C	..	..	..	..	..
DUBLIN.								
Holmes, Henry, <i>Scottish Widows'</i> ...	C	C	C	1907	P	P	..	..
Verdon, John W. H., <i>Yorkshire</i> ...	C	..	C	..	..	..	..	..
EDINBURGH.								
Rodger, David Hain, <i>Scottish Widows'</i> ..	..	...	..	..	H	..	..	..
GLASGOW.								
Lindsay, Matthew, <i>National Provident</i> ..	C	C	C	1907	H	H	..	..

SUCCESSFUL CANDIDATES

AT THE EXAMINATIONS OF

THE INSURANCE INSTITUTE OF TORONTO,
APRIL, 1907.

N.B.—I. denotes "First-class Honours"; II. denotes "Second-class Honours"; "P" denotes "Pass."

First Examination. Fire and Life Branches.

NAME.	COMPANY.	(A)	(B)	(C)	(D)	(E)	(F)
J. L. Noble, -	Brit. America	..	..	P	..	..	..
H. E. Freeman, -	Western	P	..	P	II.	..	II.
E. M. Macrae, -	Lond. & Lan.	..	..	II.	..	..	..
B. R. Martin, -	Western	..	P	II.	..	..	..
H. E. Harcourt, -	St. And Col.	P	..	II.	II.	..	I.
J. E. Byrns, -	Crown Life	..	..	..	II.	P	I.
F. E. Pegler, -	Manuf. Life	..	..	I.	..	..	P
F. K. Howson, -	Manuf. Life	..	..	I.	..	P	P
D. A. Sinclair -	Manuf. Life	..	..	II.	..	..	II.
J. H. Domelle -	Canada Life	..	..	I.	..	..	..

Second Examination. Life Branch.

NAME.	COMPANY.	(A)	(B)	(C)	(D)	(E)	(F)
A. M. Robb, -	Canada Life	II.	..	..	..	..	..
G. Staunton, -	Confed. Life	P	..	..	..	..	..
F. E. Pegler -	Manuf. Life	..	..	II.	P	..	P

Third Examination. Life Branch.

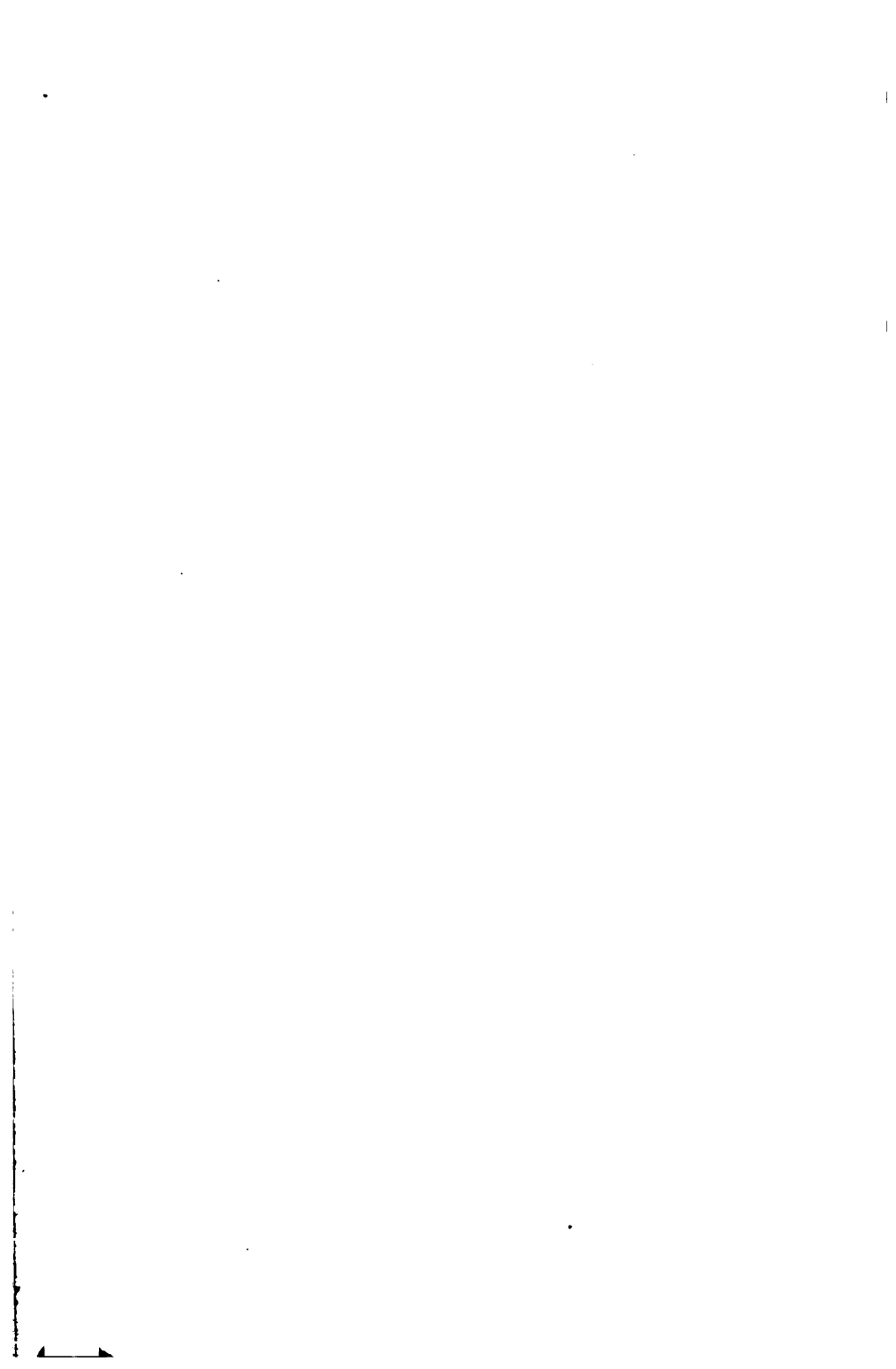
NAME.	COMPANY.	(A)	(B)	(C)	(D)	(E)	(F)
C. C. Macklin, -	Canada Life	..	..	..	..	II.	..

Second Examination. Fire Branch.

NAME.	COMPANY.	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)
J. L. Noble, -	Brit. America -	P	..	II.	..	P	II.	I.	P
R. R. Martin, -	Western - -	P	..	II.	..	I.	..	..	..

Third Examination. Fire Branch.

NAME.	COMPANY.	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)
J. L. Noble, -	Brit. America -	..	..	I.	..	II.	..	..	..
H. A. Joselin, -	Norwich Union	..	P	..	..	..	..	..	..
P. Von Szeliaki, -	Manitoba Fire -	..	..	..	..	I.	..	..	..
F. E. Roberts, -	Norwich Union	..	II.	..	..	..	..	..	..
E. M. Macrae, -	Lond. & Lancs.	..	..	..	..	P	P	..	..
R. R. Martin, -	Western - -	..	..	I.	..	..	P	P	P
F. Hall, - -	Western - -	..	..	..	..	..	..	P	..



INDEX

OF VOLUMES I. TO IX. INCLUSIVE.

ACCIDENT.	VOL.	PAGE
DEVELOPMENTS OF ACCIDENT INSURANCE. By J. Corbet M'Bride,	IX.	29
EMPLOYERS' LIABILITY: ITS HISTORY, LIMITATIONS, AND EXTENSIONS. By Charles H. Green,	I.	269
EMPLOYERS' LIABILITY AND THE WORKMEN'S COMPENSATION ACT, 1897. By Charles H. Green,	III.	443
PERSONAL ACCIDENT INSURANCE. By Alfred Foot, F.S.S.,	V.	329
SICKNESS INSURANCE. By Henry Brown,	I.	233
WORKMEN'S COMPENSATION. By C. H. Franklin,	IV.	371

FINANCIAL AND GENERAL.

A LIFE OFFICE PROSPECTUS. By James Stirling, F.F.A.,	VII.	183
ADDRESS by N. B. Gunn, F.F.A., F.I.A., Glasgow,	IV.	xxv
AIMS AND REWARDS OF AN INSURANCE CAREER. By John Rodger,	IV.	419
BYE-LAWS OF THE FEDERATION,	VI.	xli
CONSEQUENTIAL LOSS. By Herbert R. Clough,	VII.	331
CONSTITUTION OF THE FEDERATION,	VIII.	xxxiii
Do. do.,	IX.	xxxix
ECONOMICS OF INSURANCE: THE. By John M. M'Candlish, F.R.S.E., F.F.A.,	I.	53
ETHICS OF INSURANCE. By T. E. Young, B.A., F.I.A.,	I.	211
HELPS AND HINDRANCES. By B. Hal Brown, F.S.S.,	V.	291
INSURANCE FIELD WORK: ITS LIGHTS AND SHADOWS. By Robert Chapman,	VI.	395
INVESTMENTS. By David Deuchar, F.R.S.E., F.F.A., F.I.A.,	I.	305
LEGAL TITLE: DAILY QUESTIONS OF. Notes on Stamp Duties. By Warren Crosbie, B.L.,	IV.	335
MARINE INSURANCE: A BIRD'S-EYE VIEW OF THE PRESENT SYSTEM OF. By Charles Macarthur,	I.	105

	VOL.	PAGE
MARINE INSURANCE: HISTORY AND PRACTICE OF. By Douglas Owen,	IV.	395
MORTGAGES. By James Robert Hart, F.I.A.,...	V.	235
NOTES ON INVESTMENTS. By John Robb,	VII.	343
ORPHANAGE: REPORT OF THE GENERAL COMMITTEE OF THE INSURANCE CLERKS',	VL	xxvii
SCOPE AND WORK OF THE INSURANCE INSTITUTES. By Charles Povah,	II.	411
THE ETHICS OF EFFICIENCY. By John Loudon,	IX.	299
THE PRINCIPLES OF ORGANISATION IN AN INSURANCE OFFICE. By T. A. Young, B.A., F.I.A.,	VII.	267
WEIGHTS AND MEASURES. By C. E. Galwey, A.I.A.,	VII.	353

FIRE.

A FEW REMARKS UPON THE ARBITRATION CLAUSE. By J. Scott Cavell,	VII.	177
ACCUMULATION IN FIRE RISK. By James Robb,	I.	1
ASPECT OF ELECTRICITY FROM AN INSURANCE POINT OF VIEW: THE. By B. Chatterton, Ass. M. Inst. C.E.,	IV.	1
AUTOMATIC SPRINKLERS AND THEIR WATER SUPPLIES. By W. E. Astley,	VII.	135
AVERAGE CONDITIONS OF A FIRE INSURANCE POLICY. By Samuel J. Pipkin,	I.	243
BACON CURING FACTORIES. By James R. Warner,	VIII.	233
BAKERIES. By A. M. Clydesdale,	V.	89
BLEACH WORKS. By John W. Webster,	II.	223
BOOT AND SHOE FACTORIES. By John P. Green,	II.	301
BREWERIES AND DISTILLERIES. By W. S. Kinnear, B.A.,	II.	185
BRUSH FACTORIES. By D. C. Campbell,	VI.	109
CANADA: SOME OF ITS FIRE INSURANCE PROBLEMS. By C. R. G. Johnson,	VII.	117
CHOCOLATE AND COCOA WORKS. By Arthur F. Tooke,	IX.	71
CIVIC FIRE BRIGADE AND FIRE INSURANCE. By John Loudon,	VIII.	173
COAL-TAR DISTILLING AND CHEMICAL MANURE MANUFACTURING. By C. E. Truitt,	IV.	21
COCOANUT FIBRE AND MATTING FACTORIES. By F. F. Worthington,	VIII.	203
COLD STORES. By J. A. Bewly,	VI.	51
COLLIERIES. By John G. Boss,	II.	283
CONFECTIONERY WORKS. By J. Headon Boocock,	V.	111

	VOL.	PAGE.
CORN MILLS. By James Wardle,	III.	169
COST PRICE OF FIRE INSURANCE. By James Ostler,	III.	255
COTTON FACTORIES AND SHEDS. By J. H. Bagshaw,	III.	87
COTTON SPINNING MILLS. By Thomas A. Bentley,	II.	253
COTTON SPINNING MILLS (Second Part). By Thomas A. Bentley,	IV.	37
CYCLE FACTORIES. By A. E. Patrick,	IV.	269
DRAFTING FIRE INSURANCE CONTRACTS. By C. E. Noverre,	II.	113
ELECTRICAL DRIVING OF COTTON MILLS. By A. Kelly, A.M.I.E.E.,	VII.	1
FAILURES OF SPRINKLER INSTALLATIONS AND THEIR CAUSES. By Thomas A. Bentley,	VIII.	303
FARMS AND FARMING STOCK. By C. R. Quinton,	III.	151
FELT HAT WORKS. By J. H. Chapman,	III.	1
FIRE EXPOSURE HAZARD. By Robert M'Connell,	VIII.	151
FIRE-EXTINCTION EXPENSES. By H. Orton Smith,	V.	367
FIRE HAZARD OF THE MORE IMPORTANT CHEMICAL PRODUCTS. By Dr. E. H. Cook, M.A., F.I.C., F.C.S.,	III.	63
FIRE HAZARD OF CENTRAL CITY DISTRICTS: THE GROWING. By David L. Laidlaw,	I.	81
FIRE INSURANCE. By John M. M'Candlish, F.R.S.E., F.F.A.,	III.	319
FIRE-PROOF BUILDINGS AND FIRE-RESISTING FLOORS. By William Beeston,	V.	189
FIRE RISKS FROM A CHEMICAL STANDPOINT. By Walter G. Macmillan,	I.	293
FLAX MILLS, IRELAND. By James Black,	V.	71
FLOORCLOTH AND LINOLEUM WORKS. By William Watson,	IX.	109
GASWORKS. By J. H. Chapman,	IV.	49
GUARANTEES AND TREATIES. By William Blair,	IX.	175
GUN AND SMALL-ARMS FACTORIES. By A. E. Patrick,	VII.	149
HEATING AND VENTILATION. By William Sutcliffe,	IV.	105
HOSIERY FACTORIES AND WAREHOUSES. By C. R. W. Clarkson,	VIII.	289
INDIA RUBBER AND PNEUMATIC TYRE FACTORIES. By Robert Cumming,	VIII.	249
INSURANCE OF CUSTOMERS' GOODS. By Robert Taylor,	VI.	35
JUTE MILLS. By A. D. K. Brown,	VI.	117
LACE FACTORIES. By W. H. Maryan,	VI.	93
LEGAL MATTERS RELATING TO FIRE INSURANCE. By W. E. Fatt,	IX.	251

	VOL.	PAGE.
LONDON MANCHESTER-WAREHOUSES. By Philip F. Brooks, F.S.I,	V.	1
LOSS SETTLEMENTS: POLICY CONDITIONS AND THEIR BEARING UPON. By William Montgomery, Jr., ...	I.	195
MANCHESTER SHIP CANAL WAREHOUSES. By Thomas A. Bentley,	VI.	1
MANCHESTER WAREHOUSES. By J. W. K. Schofield, ...	VI.	177
MANSION-HOUSES AS FIRE RISKS. By C. R. Quinton, ...	V.	117
METAL WORKING RISKS. By J. Headon Boocock, ...	III.	123
MODERN CORN MILL: THE. By James Ostler, ...	I.	19
MOTOR CAR WORKS. By G. K. Dixon,	IX.	165
MUNICIPAL TRADING AND FIRE INSURANCE. By W. Holbrook,	VII.	247
NOTES ON FARMING STOCK POLICIES AND LOSSES. By H. Orton Smith,	IX.	51
OIL MILLS. By F. E. Colchester,	VIII.	121
PLAN DRAWING: FIRE INSURANCE. By Pat. B. Carphin, ...	IV.	143
PORTLAND CEMENT WORKS. By Fred. W. Panton, ...	IX.	121
POTTERIES. By Frank R. Perowne,	IV.	157
PRINTERS' RISKS. By D. M. Cameron,	VII.	69
PROGRESS OF FIRE PROTECTION. By P. H. Sims, ...	VI.	225
PROGRESS AND PROSPECTS OF FIRE INSURANCE AS A SCIENCE: OBSERVATIONS ON THE. By David L. Laidlaw,	III.	293
ROLLER MILLING. By Alexander B. Dansken, ...	III.	201
ROPE WORKS. By Owen D. Jones,	III.	129
SALVAGE CORPS: THE BENEFITS TO BE DERIVED BY FIRE INSURANCE COMPANIES FROM THE ESTABLISHMENT OF. By William Postdown, ...	II.	87
SAW MILLS AND WORKERS IN WOOD. By T. B. Redgate,	V.	135
SHIPBUILDING YARDS AND MARINE ENGINEERING WORKS. By Arthur H. Knight,	III.	271
SHIRT FACTORIES. By James M. Scott,	VII.	59
SHOP RISKS. By J. S. Waterstone,	VII.	21
SOAP AND CANDLE FACTORIES. By J. Mason Guttridge, ...	VII.	49
SOME MODIFICATIONS AND DEVELOPMENTS IN FIRE INSURANCE BUSINESS. By Samuel J. Pipkin, ...	IX.	283
STRAW PLAIT BLEACHING AND DYEING, AND STRAW HAT MANUFACTURING. By E. F. Williamson, ...	IX.	269

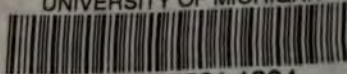
	VOL.	PAGE.
TANNING AND CURRYING. By George Chappell, ...	II.	1
TARIFF LEGISLATION. By F. J. Kingsley, ...	II.	323
TARIFF ORGANISATION IN CONNECTION WITH FIRE INSURANCE BUSINESS. By David Deuchar, F.R.S.E., F.F.A., F.I.A., ...	VI.	xlv
THEATRES AND MUSIC-HALLS. By Thomas A. Bentley,	IV.	251
THE EXTRA HAZARD INVOLVED IN ELECTRIC LIGHTING AND ELECTRIC POWER TRANSMISSION. By Kenneth J. Tarrant, F.R.A.S.,...	IX.	227
THE SCIENCE OF MINIMISING FIRE WASTE. By JAMES Sheppard, ...	IX.	185
THE THEORY AND PRACTICE OF FIRE INSURANCE BUSINESS. By Burdus Redford, ...	VII.	375
THE THEORY AND PRACTICE OF FIRE INSURANCE BUSINESS. By Pat. B. Carphin, ...	VII.	401
THE VALUATION AND INSURANCE OF PATTERNS, MODELS, MOULDS, DESIGNS, DRAWINGS, DAMASK CARDS, TEXTILE PRINTERS' BLOCKS AND ENGRAVED ROLLERS, AND SUCH LIKE. By Harford H. Montgomery, ...	IX.	91
TIMBER YARDS. By J. R. Liddell, ...	VI.	197
TOBACCO FACTORIES. By O. R. Fabian, ...	VI.	19
UNEXPIRED RISKS IN HOME FIRE BUSINESS. By David Deuchar, F.R.S.E., F.F.A., F.I.A., ...	V.	203
VALUE OF FIRE EXTINGUISHING APPLIANCES. By William Hartley, ...	VIII.	215
VARNISH WORKS. By J. Headon Boocock, ...	VIII.	113
WASTE PRODUCTS OF WOOLLEN AND WORSTED MILLS. By J. P. Eddison, ...	V.	33
WOOLLEN MANUFACTURE IN RELATION TO FIRE INSURANCE. By J. B. Roberts, ...	I.	117
WORSTED MILLS. By J. Cooper Eddison, ...	IV.	171

LIFE.

ALBUMINURIA: INTERMITTENT, IN RELATION TO LIFE ASSURANCE. By James Finlayson, M.D., ...	VI.	287
APPENDICITIS IN RELATION TO LIFE ASSURANCE. By William Thorburn, F.R.C.S., ...	VI.	307
ASSIGNMENTS OF POLICIES OF LIFE ASSURANCE. By Charles E. Howell, B.A., LL.D., ...	VI.	373
CANADA AS A FIELD FOR LIFE ASSURANCE. By David Burke, A.I.A., F.S.S., ...	VI.	357

	VOL.	PAGE.
DISEASES OF OCCUPATION. By Professor Oliver, M.D., F.R.C.P.,	V.	297
DOUBTFUL LIVES FOR LIFE ASSURANCE: AN ENDEAVOUR TO ESTIMATE THE VALUE OF CERTAIN. By F. Le M. Grassett, M.B., F.R.C.S.,	V.	323
EXTRA PREMIUMS FOR LIFE ASSURANCE. By J. Moody Stuart, F.I.A., F.F.A.,	III.	401
GLYCOSURIA AND LIFE ASSURANCE. By Dr. J. Stitt Thomson, F.R.C.P.E., F.R.C.S.E.,	IV.	293
HEART DISEASES IN THEIR RELATION TO LIFE ASSUR- ANCE. By Henry Handford, M.D., F.R.C.P.,	V.	313
HEREDITY. By William Thorburn, F.R.C.S.,	II.	369
INDUSTRIAL LIFE ASSURANCE. By Joseph Burn, F.I.A.,	V.	345
INVESTMENTS: LIFE ASSURANCE. By N. B. Gunn, F.F.A., F.I.A.,	V.	217
LEGAL ASPECTS OF LIFE ASSURANCE. By John L. Mounsey, W.S.,	IX.	39
LEGAL MATTERS IN RELATION TO LIFE POLICIES: NOTES ON SOME. By W. P. Phelps, M.A., F.I.A.,	VI.	409
LIFE AGENCY WORK. By W. M. Potterton,	III.	419
LIFE ANNUITIES. By Alfred W. Watson, F.I.A.,	IV.	299
LIFE ASSURANCE PROSPECTS AT THE OPENING OF THE TWENTIETH CENTURY. By H. W. Andras, F.I.A.,	IV.	323
LIFE ASSURANCE—SOME MODERN ASPECTS OF COMPETI- TION: NOTES ON ASSURANCES WITHOUT MEDICAL EXAMINATION AND OTHER SCHEMES PRESENTLY IN VOGUE. By William R. McIlvenna, F.F.A.,	IX.	1
LIFE ASSURANCE TRADING. By A. D. Lindsay Turnbull, F.F.A., C.A., F.C.L.S.,	VIII.	1
LIFE BRANCH WORK. By Walter Brown,	I.	9
MEDICAL EXAMINATIONS. By Vincent Moxey, M.R.C.S., L.R.C.P.,	VI.	295
METHODS OF DEALING WITH UNDER-AVERAGE LIVES. By T. B. Macaulay, F.I.A.,	VIII.	99
METHODS OF DIVISION OF THE SURPLUS OF LIFE ASSUR- ANCE OFFICES. By William Tait, F.F.A.,	VIII.	317
MUSCULAR EXERCISE UPON THE HEART AND BLOOD VESSELS: EFFECTS OF. By T. Sydney Short, M.D., M.R.C.P., D.P.H.,	II.	397
NEW MORTALITY TABLES OF THE INSTITUTE OF ACTU- ARIES AND THE FACULTY OF ACTUARIES, KNOWN AS THE BRITISH OFFICES LIFE TABLES, 1893. By Philip L. Newman, B.A., F.I.A.,	V.	261

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